AD-A266 283

US Army Corps
of Engineers

DESIGN QUALITY TASK FORCE

SURVEY COMMENTS

Engineer Strategic Studies Center

DTIC
ELECTE
JUL 01 1993
S
D

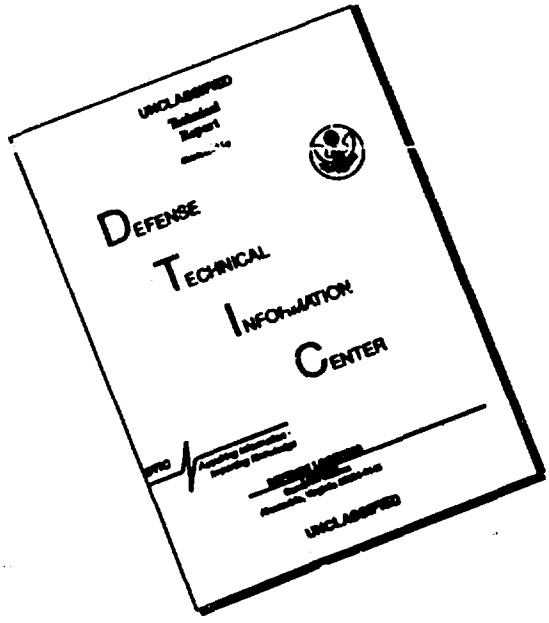
The view, opinions, and/or findings contained in this report are those of the author(s) and should not be construed as an official US Department of the Army position, policy, or decision unless so designated by other official documentation.

DISTRIBUTION STATEMENT
Approved for public release;
Distribution Unlimited

93-14815

93 6 29 067

DISCLAIMER NOTICE



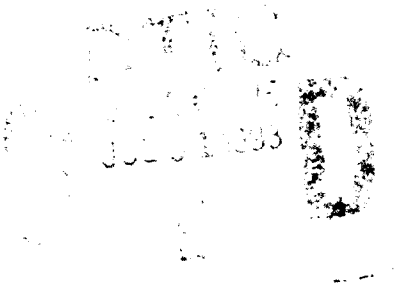
THIS DOCUMENT IS BEST QUALITY AVAILABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

2

DESIGN QUALITY TASK FORCE

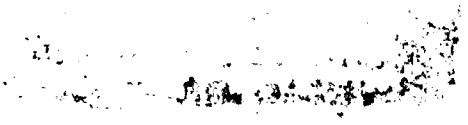
SURVEY COMMENTS

(From ESSC Questionnaire, February 1992)



Prepared by
Engineer Strategic Studies Center
U.S. Army Corps of Engineers

May 1993



REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average ... hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	May 1993	Final (February 1992 to April 1992)

4. TITLE AND SUBTITLE

Design Quality Task Force
Survey Comments

5. FUNDING NUMBERS

6. AUTHOR(S)

Larry Lang

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

U.S. Army Engineer Strategic Studies Center
Casey Building #2594
Fort Belvoir, VA 22060-5583

8. PERFORMING ORGANIZATION REPORT NUMBER

CETEC-ES-P-93-7

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

Headquarters, U.S. Army Corps of Engineers
Design Quality Task Force/Engr Strategic Studies Ctr
20 Massachusetts Avenue, N.W.
Washington, DC 20314-1000

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT

Approved for public release;
distribution is unlimited

12b. DISTRIBUTION CODE

13. ABSTRACT (Maximum 200 words)

In November 1991, the U.S. Army Corps of Engineers (USACE) commissioned a Design Quality Task Force (DQTF). Its objective was to identify problems with, and recommend improvements in the quality of, design products in the Corps' Engineering Divisions. As part of this overall effort, the Engineer Strategic Studies Center (ESSC) performed a comprehensive district-level survey in February 1992 to assess the importance of issues and the Corps' perception of where it is performing today on these issues. The questionnaire collected data by program (Civil Works and Military Construction), by function (Planning, Construction, Program and Project Management (PPM), Operations, and Engineering), and by position (Division Chief, Branch/Section Chief, or Journeyman). Approximately one-third of the 1231 people who returned questionnaires wrote in optional comments. This report contains verbatim comments from the questionnaire forms. The report has a section for each function, and comments for each function are sorted by position. These comments provide "grass roots" insight into Design Quality in USACE.

14. SUBJECT TERMS	15. NUMBER OF PAGES
U.S., engineers, management, survey, design quality, PPM, construction, planning, operations	62
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	None

DESIGN QUALITY TASK FORCE
SURVEY COMMENTS

Figure **Page**

Accesion For
NTIS CRA&I
DTIC TAB
Unannounced
Justification
By
Distribution /
Availability Codes
Dist | Avail and / or Special
A-1

DTIC QUALITY INSPECTED 5

I. INTRODUCTION

In February 1992, the Engineer Strategic Studies Center (ESSC) administered an Engineering Product Quality Questionnaire to all USACE district organizations as part of the Design Quality Task Force (DQTF) effort. This report contains verbatim comments from that questionnaire. The comments are intended to give "grass roots" input on design quality in the Engineering Divisions. Since confidentiality was guaranteed, no person or district organization is identified. Comments have been sorted by position (Division Chief, Branch/Section Chief, and Other) and by function (Engineering, Planning, PPM, Construction, and Operations). This report supplements the other products of the DQTF.

ESSC mailed the questionnaires to the Chiefs of the Engineering Divisions. **Figure 1** shows which districts received the Civil Works (CW) Only questionnaires and which received the CW and Military Construction questionnaires. The Chiefs of Engineering distributed eight questionnaires to each of the following district functional elements: Engineering, Planning, Construction, PPM, and Operations. The Chiefs of the functional elements were asked to complete a questionnaire and to distribute the remaining seven questionnaires to their Branch Chiefs (two), Section Chiefs (two), and Journeymen (three). Individual respondents were asked to complete the questionnaire, seal it in an envelope (for confidentiality), and return the sealed envelope to the Chief of the Engineering Division. The Chief of Engineering then packaged the sealed responses in an envelope and mailed them to ESSC. Some respondents mailed the surveys directly to ESSC.

CIVIL WORKS (CW) ONLY			CW & MILITARY CONSTRUCTION	
Nashville	Rock Island	New England	Fort Worth	Kansas City
Pittsburgh	Huntington	Philadelphia	Tulsa	Omaha
Charleston	San Francisco	St. Paul	Savannah	Baltimore
Jacksonville	Little Rock	Portland	Los Angeles	New York
Wilmington	Memphis	Walla Walla	Sacramento	Norfolk
Buffalo	New Orleans	Albuquerque	Mobile	Louisville
Chicago	St. Louis	Galveston	Seattle	Honolulu
Detroit	Vicksburg		Alaska	

NOTE: CW districts received 40 questionnaires: 8 each for Planning, Construction, Operations, PPM, and Engineering. CW and MC districts received 64 questionnaires: 40 for CW (same as above) and 24 for MC (8 each for PPM, Construction, and Engineering).

Figure 1. SURVEY RECIPIENTS

Figure 2 is a copy of the questionnaire that was distributed in February 1992. Some comments in this paper refer only to the issue numbers on the questionnaire. Data on "Importance," "Level Today," and "Most Important to Work on Now" are provided in other DQTF reports.

How **IMPORTANT** are these issues for Design Quality in USACE?
What **LEVEL TODAY** is Engineering on these issues?

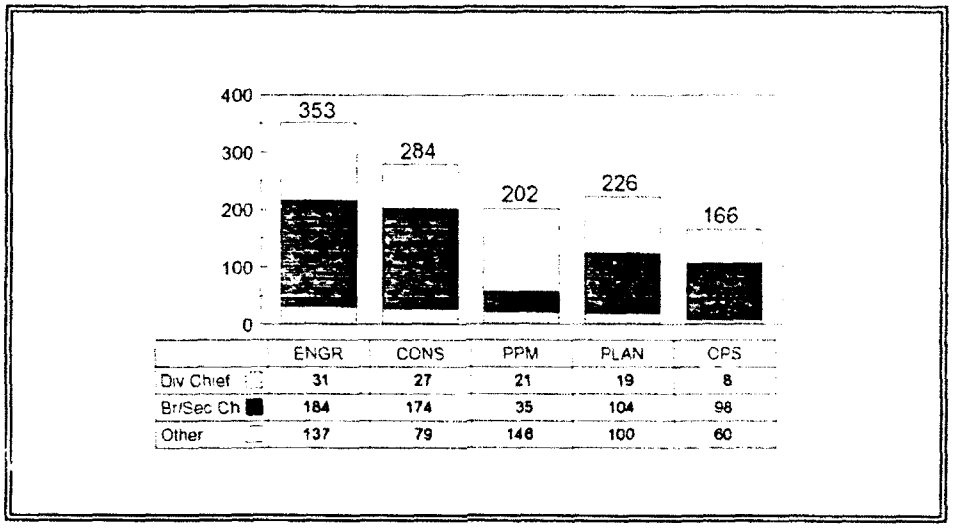
ISSUES (CW & MC)	IMPORTANCE Low High	LEVEL TODAY Low High
Engineering --	*Please circle your choices.*	
1. is responsive to your requests for products/services.	1 2 3 4 5	1 2 3 4 5
2. discusses with you the scope and requirements prior to initiating work.	1 2 3 4 5	1 2 3 4 5
3. maintains open communications.	1 2 3 4 5	1 2 3 4 5
4. visits the project site to clarify requirements prior to initiating work.	1 2 3 4 5	1 2 3 4 5
5. produces cost effective products.	1 2 3 4 5	1 2 3 4 5
6. visits the project site during design.	1 2 3 4 5	1 2 3 4 5
7. products are commensurate with the scope, complexity, and schedule of the project.	1 2 3 4 5	1 2 3 4 5
8. products are cost effective for **small projects** (Planning or CA < $5M; Construction < $2M; Operations < $1M. For Mil Const, Small Projects < $1M).	1 2 3 4 5	1 2 3 4 5
9. products meet your requirements.	1 2 3 4 5	1 2 3 4 5
10. delivers products on schedule.	1 2 3 4 5	1 2 3 4 5
11. products meet the requirements of **local sponsor/install.**	1 2 3 4 5	1 2 3 4 5
12. effectively incorporates environmental considerations.	1 2 3 4 5	1 2 3 4 5
13. has technically competent people.	1 2 3 4 5	1 2 3 4 5
14. has the correct number of people to do its mission.	1 2 3 4 5	1 2 3 4 5
15. delivers technically adequate products.	1 2 3 4 5	1 2 3 4 5
16. delivers products within budget.	1 2 3 4 5	1 2 3 4 5
17. has an adequate review process for its products.	1 2 3 4 5	1 2 3 4 5
18. plans and specs are complete for construction contracts.	1 2 3 4 5	1 2 3 4 5
19. provides timely products for changes to contracts.	1 2 3 4 5	1 2 3 4 5
20. has a complete understanding of requirements prior to initiating work.	1 2 3 4 5	1 2 3 4 5
21. seeks feedback on the quality of its products.	1 2 3 4 5	1 2 3 4 5
22. has an effective "Lessons Learned" system.	1 2 3 4 5	1 2 3 4 5
23. provides "state of the art" products.	1 2 3 4 5	1 2 3 4 5
24. policies and criteria are flexible.	1 2 3 4 5	1 2 3 4 5
25. effectively coordinates its work in the Engineering Division.	1 2 3 4 5	1 2 3 4 5

Please circle the 3 Most Important Issues for the Engr Div to work on now to improve Quality.

COMMENTS/OTHER ISSUES: (*** **Printed in this Report** ***)

Figure 2. ENGINEERING PRODUCT QUALITY QUESTIONNAIRE

By the cutoff date of 18 April 1992, ESSC received responses from 1231 out of a possible 1880 questionnaires, for an overall response rate of 65.5 percent. The number of responses per district ranged from 14 to 55, with an average of 32. (CW responses ranged from 7 to 36 per district, with an average of 26. MC responses ranged from 2 to 22 per district, with an average of 15.) **Figure 3** displays the number of questionnaire responses by function and position.



	ENGR	CONS	PPM	PLAN	CPS
Div Chief	31	27	21	19	8
Br/Sec Ch	184	174	35	104	98
Other	137	79	148	100	60

Figure 3. NUMBER OF QUESTIONNAIRE RESPONSES BY FUNCTION AND POSITION

Questionnaire comments were based on the following definition of Design Quality:

> A product/design that conforms to the customer/client needs and expectations (i.e., functional and technical requirements, aesthetic features), is consistent with appropriate technical criteria, and meets agreed upon time and cost estimates. Sample Engineering Division products are Studies, Analyses, Cost Estimates, Technical Appendices, Design Memoranda, Designs, Plans, Specifications, and Technical Reports.

Roughly one-third of the survey respondents (407/1231) made voluntary comments expressing strong feelings, frustrations, and kudos with respect to the design quality of products produced by the Engineering Divisions in their individual USACE districts. **Figure 4** shows the percentage of responses by function for both the questionnaires and the comments.

This report contains over 400 of these unedited comments from both the CW and MC Programs. ESSC scanned the comments and put them into some general categories:

> "**Slugs**" -- About 140 comments take shots at the Engineering Division, its people, procedures, or products. A sample Slug is ". . . Engineering is always late."
>
> "**Hugs**" -- About 70 comments embrace the Engineering Division, its people, procedures, or products. A sample Hug is ". . . Engineering has competent people."

"Letting Off Steam" -- About 200 comments are somewhat neutral about either Hugging or Slugging the Engineering Division, its people, procedures, or products. A sample Letting Off Steam is ". . . it's not Engineering's fault that . . . ."

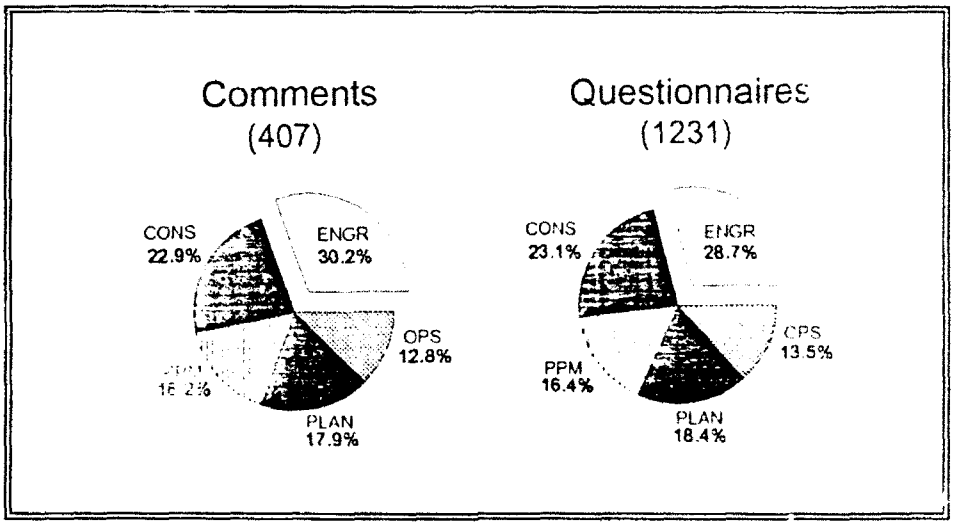


Figure 4. RESPONSE PERCENTAGES FOR QUESTIONNAIRES AND COMMENTS

Figure 5 displays the number of comments by function and position. Also, these comments are organized by function and position in the following sections.

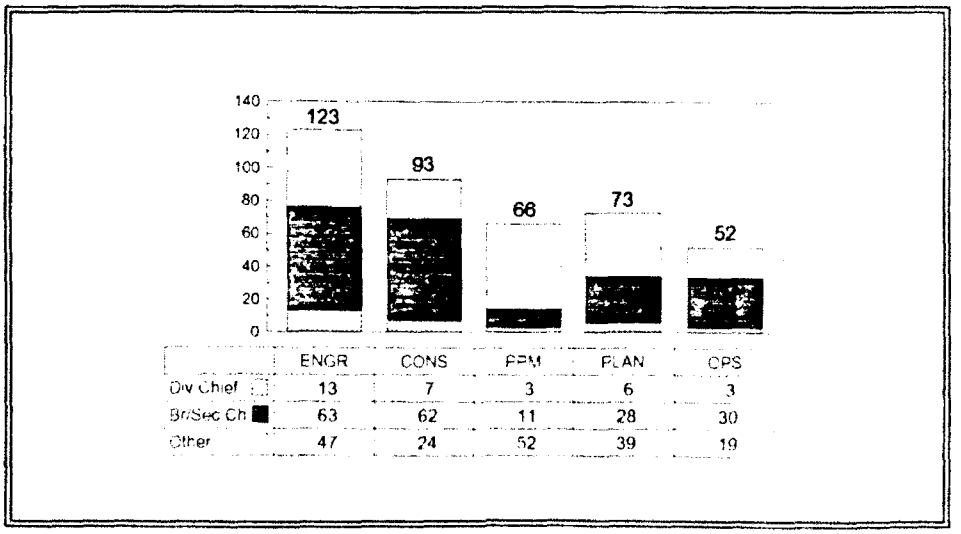


Figure 5. NUMBER OF QUESTIONNAIRE COMMENTS BY FUNCTION AND POSITION

II. ENGINEERING COMMENTS

DIVISION CHIEF

The scope and requirements are not well defined by our customers and users. They say "we will tell you what we want when we see the project." Our reviews by outside of engineering need to be "fixed." Our customers suffer from lack of competent, qualified engineers and O&M staff to make meaningful and timely reviews. As I have said many times in the past that we are subject to reviewers with authority but no accountability. There are hundreds of horror stories in this regard. Our project formulation by the customer/user needs to be improved/disciplined. Regrettably, we face enormous frustration, waste and morale problems due to the discontinuity among our customers and their users.

Corps, as a whole is headed toward losing its technical expertise because of "chaos" created by PPM and reorganization. During the past 2 years Divisions as a whole lost many excellent technical people due to better promotion opportunities in project management or with commercial firms.

With the decrease in FTE allocations, sufficient staff for proper coordination and project review is lacking and will become worse as we continue to cut back. With that, we become less cost effective and less able to maintain schedules. Our technical competence is high, but will decrease in the future as we have less time to properly train intern professionals.

I don't see how this form will lead to improvement. All these issues are very important. What's needed most is TRUST and HONESTY between the District, Division, and Chief's Office. We need support from our Division and OCE. We are their customers. I see very little support; just more roadblocks and reams of paper in support of their need to justify the obvious The Corps needs to look at the way it does business at all three levels, look at "processes" and become efficient. Get rid of roadblocks, look at value added - no value, get rid of it. We need to be a team, there is no "i" in team - only a group focused on winning! We can be winners if we will stop focusing on protecting our jobs and start serving others - that's what we are here for!!

Many issues are judgmental and cannot be quantified, i.e., "cost effective designs." Judgments will differ depending on the perspective.

I think it would be interesting to see how well we are doing (or think we are doing) in developing future leadership within our Engineering Divisions. Most of my problems with timely deliverables within budget result from Planning Division requests. They are invariably more complex than originally presented, shorter fused, and under funded.

We have the will and drive but need some "Corps-wide" tools. Specifically simple, practical, inexpensive automated systems (Hardware & Software). We need a tractor not a Mercedes.

ENGINEERING COMMENTS (CONTINUED)

Who is the customer? Is it the Chief of Operations and Readiness, the Resident Engineer, the Lock Operator, the President of a towing company, or the Pilot of the vessel going through the lock? Engineering Division must consider all as the customer and make our best judgement to arrive at our product. We cannot satisfy all and should not try. I continually have problems with our institution always looking at the Engineering element as it deals with other elements of the corporation. Most times, unless we give an individual exactly what he or she wants, they are not fully satisfied; and the he or she are diverse, depending on which one of our customers you are asking. I am not so naive as to think that the Engineering element cannot improve, however, I do not believe this survey will do anything towards that aim.

The administrative burden is overwhelming and continues to grow. Interruptions of work are so frequent that efficiency is impaired and likelihood of errors increases. Meetings seem to be non-stop and usually non-productive. There is little understanding or appreciation for the fact that Engineering has many customers (not just LCPM) competing for limited technical resources, and that scheduling is essentially resource driven. We lost FTE to form up PPMD. Even if bodies had to come from Engineering, spaces (FTE) should have come from the overhead ("support") elements. This has negatively impacted our ability to do good work on time/budget. Someone needs to look seriously at the comparative value added of overhead FTEs versus engineering FTEs.

Cost effectiveness is controlled at times by outside influences - not capabilities and work productivity of staff. Time/cost/quality are all related and affect each other - when any one gets preferential emphasis (as they sometimes do) it affects the others. Clearly we are proud of our work and continually strive to improve!

The questionnaire omits one of the most critical factors to producing quality/cost effective products by Engineering Division. That issue relates to funding in a manner that prevents disruption of the design process once it begins. The most cost effective designs and those whose quality are easiest to control are the ones that allow an uninterrupted design process once it begins. Program fluctuations and stop-short designs are major problems as far as trying to provide efficient designs. As a minimum, USACE should fund designs fully by phase (35%, 60%, etc.) without regard to quarter. Uninterrupted designs allow the same team to remain on the project and build pride and ownership. Stops require team disruption. Another problem with military construction is that our customers often change the criteria and definition of what they want. It is not unusual to start a job with scope and criteria defined by the user only to have a command change result and the new user wants a totally different concept. While users acknowledge additional costs, execution windows constrain time to make adequate revisions and quality suffers.

There are several activities that all recognize Engineering has the lead. On many of these issues Engineering must depend on others - RE for entry and ROE, Planning Div. for environmental considerations, FONSI, EAs and EISs. Engineering in many cases receives the blame for lack of GDM, P&S or other item approvals, when the Engineering effort is complete and acceptable but others' efforts are still working. In other words, their contribution affects our quality in terms of meeting schedules. The other concern I have is with meeting my technical responsibilities while losing top technical talent, with lateral moves to Project Management. Implementing the dual track for technical GS-13s is critical to Eng. Div.'s future.

ENGINEERING COMMENTS (CONTINUED)

Develop TQM approach to design and construction quality. Dual career ladder is essential if technical expertise is to be available. We must eliminate management duplication; small districts don't need DDEPM, Ch Plans, Ch Eng., and Ch ConOps.

BRANCH CHIEF

Engr projects are generally cost effective; however, on some smaller projects inflexible design policies increase costs and result in facilities that are not commensurate with needs. Engineering Div receives considerable criticism for its costs of doing business, particularly on smaller projects. It does not appear to be well understood by everyone that E&D expenditures are not limited to Engr Div. On some smaller projects in the districts, the E&D costs for Contracting Div alone approach that of Engr Div to design the project. -- The most important issue to work on now is development of a formal total quality management program for the entire district.

Engineering visits the product site to clarify requirements prior to initiating work and feedback on the quality of its products need improvement, but have lower impact on products than maintaining open communications, effectively incorporating environmental considerations, and providing timely products for changes to contracts.

Quality design begins with a well defined scope and an appropriate period for preparation of the design documents. Both are extremely rare. Crises management is today's norm.

The high overhead rates with the low design budget reduce the hours available to perform a design.

Designers need to be funded for site visits during construction.

Small jobs are underfunded, resulting in inadequate design and review time.

Issues # 13 & 14: Recruitment of technically competent people is a serious problem. Issue # 17: We are compromised by staff shortages and underfunding of projects, particularly Continuing Authorities. Issue # 24: HQUSACE regulations are very restrictive. This questionnaire is particularly deficient in that it does not address the bureaucratic processes which divert the engineers from their primary mission; i.e., a quality engineered product which meets the customers' needs. Excessive upward reporting requirements are a significant problem.

Civil Works projects need more flexibility in scope and extent of engineering detail required to support design. It is critical that engineering products are commensurate with the scope, complexity and schedule of the project. It is practiced at District but HQ too often requires more documentation. Corps needs to get better at having products that are cost effective for small projects. If they can't handle it, they should get out of small projects.

Maintaining technical expertise, decreasing supervisory positions and increasing technical specialists in higher non-supervisory grades are other critical issues.

ENGINEERING COMMENTS (CONTINUED)

Less management from top down - more "get the job done right" effort [is needed].

This [survey] completely skirts the problems. Requirements change due to change from higher authority, projects are overcharged, there are too many levels of review, and there is not adequate time to perform the work (all schedules can be adjusted except the design schedule).

Less management - more training is correct way to do job. Better definitions of "good", and "acceptable" products [are needed]. Develop tools to do job - not just for upward reporting.

Often times what is perceived as a faulty design by the user or by the construction representative is really a result of bad project books that don't define user's needs, bad programming at the 1391 stage, or expedited designs that do not give the design team adequate time to complete the design.

Engineering Division Chief and Project Managers are more interested in meeting schedules than producing a quality product. In many situations, by allowing slippage of a schedule by a few days to a week, a very excellent quality can be produced. Too many Project Managers are inexperienced; have had no design experience. In my opinion, a Project Manager should have a well-rounded background in engineering. Today very few PM's do. Most PM's are fresh out of school. Another point of importance is that there is very little on the job training. There aren't many old time engineers to train the young ones just starting off. More opportunities should be given to experienced technical engineers to become project managers.

For any organization to be effective in producing a quality product it needs to have quality people. I feel many branches/sections do not do an adequate job of recruiting talent into the Corps. I view this as a continual job. An organization is never in a position to "stay put" but must be able to bring talented young engineers into the system, develop them technically and establish career ladders for technical specialist, supervisory position, or technical manager, project manager. As an organization we don't do that well, and those of us who try are often thwarted with hiring freezes, space FTE limitations, FORCON philosophy (which I violently disagree with), or badly mismanaged realignment plans from headquarters. I have been employed by the Corps since 1965 when I worked summers during college. The Corps built its reputation not by managing projects but by technical expertise both in Engineering and Construction. The current mind-set among Headquarters and "Corporate Group" apparently is that projects can be managed without technical competence in the engineering disciplines. Oh, they talk a "good game" at times, but they have no real idea of what it takes to get work out the door and that you can't just get an AE on board to do the work without someone in-house with the knowledge and experience to review their work. In some respects, other agencies, notably EPA, now have more appreciation of this than the people in the Corps! I'm <u>not</u> against project management. I'm a firm believer in it. But our organization needs to be set-up differently - restructured, so we define responsibilities better and get rid of needless "layering" of managers at District and Division offices. Engineering and Construction, and perhaps Planning, should provide the talent pool for TMs and PMs, but Eng. Div. should concentrate on engineering and not management. Career ladders should be established that insure the development of experienced technical people who can function in either management (TM,PM) or supervisory positions. Currently we have too many management people in the organization (and not just at district level) who do not have

ENGINEERING COMMENTS (CONTINUED)

technical backgrounds in Eng. Div. or CD and do not know what it takes. This has to change or we will never have quality In terms of looking at FTEs, FORCON is a terrible and simplistic philosophy. We need to be able to contract out work at times of heavy workload, but if we reduce our organization to bare bones, everyone will be forced to be a TM and manage AE contracts, and opportunities to train younger engineers with in-house work will be lost. If this happens, no outside agency will want us doing work for them. Agencies like EPA and DOE can manage their own projects, they don't need us for that. EPA already recognizes in many of their regional offices and their headquarters that they need our technical expertise. As managers we aren't much better, if at all, than they are. If the Corps wants to survive, it needs people with technical expertise. It's what sets us apart from other agencies. Without it we will disappear. We need the technical expertise to insure quality products. If we can deliver that, customers will come to our door.

Engineering is too responsive to customer's last minute demands. Too many project delays/inaction reduces design time. Construction contract periods are too long. Government cost estimates are conservative.

The district has initiated the TQM and partnering relationships to improve communications and product quality. Resource constraints have handicapped our ability to respond on schedule and impacts product quality.

Technically competent in-house designers; however, little regard for costs or schedules.

We need to be more cost effective for small contracts - less than $100,000. We need to improve AE work.

The Engineers are becoming second rate citizens in the Corps of "Engineers." "Managers" in Planning Div & LCPM do not have enough experience to plan a girl scout cookout much less a multi-disciplined study. All they add to a project is another layer of overhead. All the support organizations are now strangling the life out of Engineering Div. I doubt if there will be our Eng. Div. in 10 years. Also, we spend too much of our time checking property, doing performance appraisals, and other peanut counting exercises.

Engineering needs to regain prominence over support elements. Technical issues and production are suffering at the hands of support matters. Also, non-technical, non-productive demands are sucking up too much of engineering's already strained resources. These trends must be reversed.

Additional layers of management, including PM's and TM's. Administrative work required on technical staff. Time required for performance appraisals/management by supervisors. Working grades of engineering designers and technical personnel are too low. Number of administrative and support personnel are too high for managing cost of doing business. More responsibilities and authority given to support organizations that should be Engineering Division.

ENGINEERING COMMENTS (CONTINUED)

I believe we often initiate a project without adequate pre-coordination. We assume everyone knows his role, and do not confirm. Prior to LCPM system, we used lead engineers in Design Branch who functioned as team leaders. This concept was stopped when Project Managers became project engineers, because the management overlay was excessive. Project team meetings have also almost ceased, with corresponding coordination reductions between team members on multi-discipline projects. The team concept would be reinstated.

SECTION CHIEF

Unfortunately, a "quality" product has been sacrificed at the expense of meeting a "schedule" on several products. The emphasis placed by PM's is on schedules and funds and not on quality.

I feel we are so consumed with schedule that there is a tendency to overlook, forget, or take for granted quality coordination before jobs go out. Coordination at several levels: 1) Engineer on the board. 2) Coordination between sections--overlay conference. 3) Conflicts with specs. Section chiefs and engineer/architects need to be accountable. I believe this should have an equal, if not higher, priority than schedule and budget (they are all important). -- Overlay conferences need greater emphasis from engineer chiefs, branch chiefs, and especially section chiefs. I believe they would be much more effective after 95% submittal rather than before. That is not to say coordination is not happening prior to 95% submittal, but not in a "formal" sense. -- We need to hear, see, and feel our customers; especially the users (like the bases). I understand there is no money for this, but we become indifferent when we don't see our clients and our products. -- Budget control is not here yet; it's coming. Making the engineer accountable for his manhours is essential. -- Getting equipment (computers) and the associated training is big in my area (help is on the way, I think).

Our efforts to obtain or control quality is affecting our ability to product cost-effective products. The preliminary studies, reports, and design documents sometimes cost as much as the project. Further, it seems that we continue to reinvent the wheel. There are some things that should be known from experience.

I firmly believe our Engr. Div. produces a quality product most of the time. However, I do not believe our products are always as good as they could be. Effective communication among the disciplines (within Engineering Division as well as across division lines) could make our products better. With the mission changes which appear to be coming our way (if we are to survive as the "Corps" of Engineers), more flexibility in policies and procedures is a must. Our people must also learn to be more flexible and open to change. Above all, we must not forget the lessons we have learned from past experience.

Too great a proportion of the District's resources go to various levels and forms of "management", much of which is simply upward reporting that produces little except for more reporting requirements.

ENGINEERING COMMENTS (CONTINUED)

Issue # 13: Work force is relatively young and inexperienced in design and constructability. The result is that many projects cannot be constructed as initially designed. Adequate training by experienced supervisors (if there are any) is mandatory as well as required visits to construction sites by design personnel. Small projects do not have enough funds for site visits. Issue # 2: Project Managers (PM's) discuss scope and requirements with clients prior to initiating work. Because PM's are inexperienced in design (not having spent much time in the trenches), they frequently must return to the client for clarification of scope of work for the design elements. Very few of the Engr. Div. PMs and LCPMs come from the technical divisions. More cross-training in the technical divisions for PMs and LCPMs is required or these positions should be filled with personnel from the technical divisions. Issue # 21: Once a project is completed, Engr. Directorate seldom receives feedback unless there are serious problems. Feedback from Construction Directorate during construction of a project is minimal unless design personnel insist on visiting a site during construction.

Issue # 14: Engineering seems too heavy on management, i.e. project managers, project coordinators, planners and technical managers. There are fewer technical working people putting out the end product, i.e. production line people, as there were ten years ago. Much money is spent on tracking funds. Issue # 20: Because of time constraints, the design is started while the clearances with other agencies have not yet been completed. As a result, the design has to change. Issue # 24: There are many regulations and policies put out by higher authority which sometimes do not fit the work. In the past, military work was highly regulated, while civil works projects were very flexible. Now civil works projects are affected by numerous regulations and policies. There should be more flexibility for smaller projects. MCACES estimates are too expensive to do for small projects.

Issue # 7: These items are not mutually inclusive. Issue # 8: Planning usually wants "everything" for "nothing." Issue # 10: Manpower is overloaded. Issue # 23: Eng. Div. is not asked to provide "state-of-the-art" products. They are asked to provide cheap, fast products.

Do "cost effective" and "within budget" belong in a questionnaire with design quality? With emphasis on cutting budgets and TQM concepts, both are at two ends on the spectrum.

Engineering should be more committed to design quality, seeking employees committed to quality and hiring AE's committed to design quality.

Issue # 10: Every project anymore is "hot." It is no wonder we can't meet impossible schedules, too many promises made by uninformed management. Issue # 16: Inadequate funds are allocated for engineering design. Quality products cost money. Don't believe otherwise - only those persons who never followed up on the end product believe otherwise. Issue # 24: Too many design criteria regulations are in effect. Streamlining and flexibility in implementing the regulations are needed. In general, if you want to produce cost effective projects on schedule, ensure the information provided on day one is complete - that all pertinent using agency personnel have played a role in providing information, and allow no changes once their submissions are made. Otherwise you'll never solve these issues.

ENGINEERING COMMENTS (CONTINUED)

Project schedules/budgets are important and we must do better than we have in the past in these areas, in order to satisfy our customers. Most engineer managers recognize this as an issue that is critical to the future of the Corps of Engineers. However, even more critical is design quality. If we lose this, we have lost everything, including the long held reputation of the Corps as the best overall technical engineering organization in the world. It is obvious that we should strive for better schedule and budget control, but not push technical competence to the background in favor of these.

Part of the quality issue is time. We have difficulty separating time and quality with our customers. Some customers need educating in their responsibility regarding time. The Air Force Project Mangers constantly request work prior to receipt of funds and authority. DLA moves funds in glacial time yet they decline to fund an entire FY at a time. Another quality issue is appearance versus utility versus costs. The colorful, "soft" interiors frequently requested have high first cost, are expensive to maintain/clean and are subject to damage by troops. The directives and DD Form 1391's rarely contain sufficient funds for the project described. They virtually never reflect the cost of meeting user expectations for interiors. We have a consistent "choke" point for work. Materials and spec section. Yet they have been virtually the same size for 10 years. If Cost Engineering doesn't quit changing the CWE the day of bid opening, we are going to lose another customer of choice.

All these issues [in the questionnaire] are important. Differences shown are by degree of difference. Our E&C Division eliminates many of the problems experienced where districts have separate Engineering and Construction Divisions.

Issue # 17: In-house reviews generally go smoothly. Problems often develop due to unwarranted comments at the Division level.

I feel that in general the Engineering Division functions fairly well. I do believe that there are a few people who tend to hamper the quality of engineering because of lack of competence in design and management of their work. They are also unable or unwilling to communicate with other people, which affects the progress of others, ultimately affecting the overall cost and schedule of the project. I do not believe that project costs are managed well, but that has to do with the non-user friendly CETAL system which does not allow for easy tracking of costs, especially at the lower management levels. I was never given the impression that district policies and criteria were to be considered flexible. Problems have often arisen because of conflicts with policies or criteria and the impression was that we must stick to the policy or criteria. I have also seen this expressed as far as using engineering regulations, manuals, etc. and the use of new, innovative, state-of-the-art products; what is new is not encouraged because it does not follow the Corps designs (which might be out of date anyway).

I believe that COE engineering services should be addressed on the basis of which offices produce the best services to keep their customers satisfied (satisfaction designated by quality, schedule and budget). There have been two approaches used to date: 1) put the people where the work is, and 2) designate centers of expertise. I don't think either concept is valid. Often by putting people (FTEs) where the work is located, you lose your experience base. The most experienced and capable people don't go where the work is located, leaving a district with a big workload, for, often, a short period (5-10 years). The district has to try and bring in new people

ENGINEERING COMMENTS (CONTINUED)

and train them without an experienced, effective staff to do so. I believe that designating centers of expertise may be worse, as I feel this process would be more heavily influenced by whom the district had in a high level position in OCE, rather than the quality of the work. I believe the "free market" concept is best. By this, I mean a district "design partnering" should be established by which districts could share their work with other districts (often not in their own division), based on expertise, past track record of work, etc. I think this concept allows the work to flow to districts who can do the best job. I believe it is essential that this work be encouraged and recognized by USACE in the FORCON process so that the receiving district which has a good qualified staff, a good reputation to deliver work on schedule and within budget, and wants the work can receive it.

It takes too much to get training, software, and equipment up to date. We need a streamlined process to keep up with a fast changing world.

Engr Div has some very competent people but this organization is decreasing due to inability to compete with State, County, City and private AE's salary wise resulting in excess turnover. The replacement employees are not as competent now and many will not develop to be as competent as the departing employees because of limitations on who can be hired (from within, management directed instead of freedom to hire engineers better trained and more interested in the particular discipline). The way LCPM is implemented results in (what appears to technical sections) as too many project planning/engineering positions vs the number of designers.

What is missing here is that the "quality" often suffers at the hands of budget and schedule.

Maybe with reduced resources (people and design costs), we need to reduce our review effort to a "fatal errors" check, rather than a detailed review of an AE's work. Make the AE's more responsible for their work!

Cost effectiveness of Civil Works products, delivering products on schedule and within budget is severely affected by archaic hierarchical/review process and duplicity of effort between Engr Div and Proj Mgmt Div. We have recently begun to state that we intend to run the District as a business. I submit that the Civil Works plan formulation process and Administration and COE's policy to inject another element of bureaucracy into the process (Project Management) dooms such a business to failure. The Civil Works process is archaic, suffers from duplicitous and/or ineffective review, is not responsive to customers, suffers from lack of a clear policy-making structure, and is burdened by rules, regulations, and policies that no one thoroughly understands or can apply correctly. A business that intended to remain competitive and profitable would eliminate or streamline organization levels, delegate decision making authority to lowest possible levels, be courageous to change agency mind sets, take risks in order to execute, and eliminate 90 percent of existing procedures, guidance or regulations.

It is most important that engineering develop a high level of project understanding, prior to initiating work from which realistic budgets, schedules and expectations can be based. Unforeseen project changes should be accompanied by revisiting budget, schedule and quality plan to determine adjustments. Quality is achieved only through sound process - understanding (defining expectations), planning and monitoring the product.

ENGINEERING COMMENTS (CONTINUED)

Perhaps the largest contributor of higher and higher costs is the continual issuance of design guidance, required "studies", etc. - and never a lessening of effort, and budgets just get tighter! Programs Army and Air Force are almost always released late - everything's in a rush - lack of time to get the job done right.

In recent years, there has been a significant shift of resources from the purely technical to budget/schedules. This is eroding technical competency. We desperately need effective dual tracking.

Schedules dominate the process - no help or emphasis is given to increasing efficiencies within support elements, which would increase available design time (e.g. current 1 year to obtain AE contract, 9 months to 1 year to obtain a survey, 2 to 3 weeks for reproduction and mailings). Review process (in-house and outside) is technical "blackmail" system, i.e. "It will take X amount of time (years) and X amount of $ to do this study before we can answer that question." Simplification of reporting and design processes is needed. We are computer slaves inputting data for reports; and have a lack of reliable data from on-board systems (financial systems and networks). We use inefficient design tools and are required to use "more accurate" computer programs (i.e. MCACES). Need to simplify the system, and quality and timeliness will improve. These systems have become increasingly complex and inadequate in reducing work and increasing timeliness. Training, education and experience lead to quality. Many young professionals are turned off by the "dumb" rules, bureaucrats, technocrats, slowness of the organization, inability of organization to accomplish an objective, and inability of management to accomplish such things as floor space, new furniture, classification of job descriptions, supplies, etc. They are leaving the Corps. We need to grow quality people. The personnel process is a joke! How can a District Engineer or Division Chief be responsible for their functions when we have backlogs of actions which take years. In no other business in the world would a clerk tell the executive of an organization that he can't hire what he needs to accomplish an organization's mission. Quality suffers when inadequate staff with proper qualifications cannot be obtained to accomplish a mission.

"Schedule" is the driving factor affecting quality. Until management places quality above "schedules", quality will always suffer.

Issue # 24: This issue is inappropriate. Policies should be consistent, not flexible. "Criteria" must be consistent and in accordance with TMs and engineering instructions.

The right blend of people in a design organization is a must to produce professional/quality products. You need experienced personnel mixed with youth for innovative thinking. As I see it in the Corps, unless the dual career ladder is implemented, then eventually you will lose that design experience to management. I see that happening now.

There are three factors to a good design - schedule, budget and quality. I feel that management views these in the order of schedule, budget and quality, whereas these features should be viewed as quality, budget, schedule.

ENGINEERING COMMENTS (CONTINUED)

Too many decision makers/non-design related "managers" burden us with a high OverHead. We should transform these positions into professional/technical (productive) positions. Being understaffed and continually challenged about design costs (result of high OverHead) and schedules is frustrating.

Retaining highly qualified people is very important. The Corps grade structure leaves much to be desired. All working grades should be GS-12.

Excessive overhead costs make engineering costs appear high. There is too much stress on "management" and not enough on "leadership". Administration, scheduling, cost tracking, and other non-technical issues seem to be dwarfing the technical issues.

I believe this form was designed for external customers. I am a customer of other branches, but am not truly external to Engineering.

We don't have people with long term (>10 - 15 years) experience.

Engineering products quality depends primarily on an experienced, well-trained work force. This requires continued technical training and a significant amount of "in house" work.

Engineering needs better qualified project management personnel to lead the engineering team to produce better, more timely products.

In my opinion the biggest obstacle to improving engineering product quality is communication. Recently a PPMD was established to be the continuing contact point with users. My opinion is that it has just added another link in the chain of communications between designer and user. For example, communication typically has to go: Designer - Engineer Manager - PPMD - DEH - User. It's no wonder the designer doesn't always give the user what he wants. There are 4 or 5 points to garble the message, lengthen the time of transmission of the message (delay the schedule), and increase the cost of the project (bust the budget) without contributing directly to the design (product).

The sometimes overt but omnipresent pressure applied through the Project Management system to get the job done to meet a schedule and to operate within a previously estimated budget which can work to diminish the desire for a quality product. A lack of leadership skills among some supervisory personnel has a negative effect on product quality.

During review I don't see computational errors very much, but I do see oversights because some team members don't understand the project or how it functions. Technical people are often team members on up to thirty teams. Remaining focused and knowledgeable for thirty projects is very difficult. Under these conditions it can't really be considered "team design."

ENGINEERING COMMENTS (CONTINUED)

OTHER--CIVIL ENGINEER

Mandated schedule and time required to produce quality product may not agree. Local sponsors' requirements may conflict with established criteria or policies. Mandated budget may not agree with money required to produce quality product. State of the art isn't necessarily equated with the best engr solution.

Issue # 2: (Engr discusses with you the scope and requirements prior to initiating work) Is related to question #4 (Engr visits the project site to clarify requirements prior to initiating work)--need more multiple-discipline scope development. Question #14: (Engr has the correct number of people to do its mission) We are brutally understaffed at technical level. Question #21: Very related to Question #14--no time to check.

Engineering has technically competent people, however, retention of quality people is very difficult with the current grade/pay structure. Working grades are low with promotion requiring a switch to management. Creation of a higher technical ladder is essential to keeping and maintaining technical expertise. More effective use of performance ratings and awards would help in improving retention until such a technical ladder is established. (A technical ladder is already in place at Corps labs). Currently, Engineering has an unbalanced workforce -- office with the heaviest workloads are currently severely under staffed while others have a very light workload with full staffing. This is particularly true when considering all district offices (to section level); Engineering Div., Planning Div., Life Cycle/Project Management Div., and Con-Ops Div. Communication between offices is sometimes overshadowed by attitudes of (1) Indecision -- because of not wanting to be responsible for recommendations; (2) Territorialism -- that's not my responsibility, etc., and (3) Fear -- not wanting to "rock-the-boat" for any reason. This is especially true between divisions.

Sometimes schedules take a more important role than saving money. I think this is an issue that badly needs to improve, not just in engineering but Corps wide.

Eng. Div. needs to invest more time and effort in training its personnel to match the capabilities of competitive outside industry. This would include computers and CADD system use and utilization. Currently, there seems to be no priority of responsibilities such as civil designs, military/building designs, planning studies, etc. I feel Eng. Div. getting involved in some of the planning studies is unnecessary and not an efficient way to perform work. Many times, PD has been working months to develop the study plan, then it gets dumped to Eng. Div. to absorb all the info PD spent months to develop. I think Eng. Div. needs to keep qualified people that can produce. The system in use now makes it difficult to produce because of insufficient staffing, and lack of proper training and development. In order to keep the highly qualified people, we need challenging "state of the art" type projects. But to do them, an investment needs to be made in CADD equipment, training, micro-computers, design training, and office environment.

Current regulations and policies are too restrictive in obtaining materials and outside services. This isn't cost effective and wastes considerable time. Even having an Indefinite Delivery contract in effect requires considerable time and paperwork, and isn't suitable for obtaining services in a timely manner. Current method of funding projects is inefficient. The

ENGINEERING COMMENTS (CONTINUED)

distribution of funds at the beginning of the new fiscal year takes too long. It's virtually well into the second quarter of the FY before funds for most projects are known. Having funds that don't carry over to the next fiscal year is wasteful and results in panic spending at the end of each FY.

I believe that Engineering Division, working within funding, manpower, contracting, environmental and policy constraints, is doing a very good job. I believe our organization should become structured more like AEs to provide a cost effective product.

Issues # 10 & 16: Budget and schedules seem to drive projects, even though project requirements change. More flexibility is needed. Issues # 21 & 22: Budget and schedules limit field review by young designers during construction.

There is extreme resistance to innovative solutions to engineering problems. The quality & originality of solutions should be made a critical element of supervisory appraisals.

Because of FTE reductions, it seems that the number of engineers is not sufficient to accomplish our mission. Items sacrificed are back-checking and reviews which are important. Also, because the Division is so "lean", adjusting to added new work (i.e. emergencies, ESA) is difficult to do without affecting the schedule and often the budget of on-going work. Small projects may be more efficiently handled by a small projects section, consisting of inter-disciplinary engineers who could do several aspects of the project. Traditional stovepipe handling of small projects is inefficient - and thus costly.

I work in Foundations and Materials Branch. I feel Eng. Div. does not have an efficient review process for plans and specs. At present, the plans and specs are reviewed throughout the District, i.e. Eng. Div., Plan. Div., and Const. Div. at the same time, which results in numerous and similar comments, because Design Branch did not send out a complete or correct package. I feel plans and specs should be locally reviewed in Eng. Div. and each Branch's comments (sometimes numerous) be incorporated in the plans and specs before they are sent out for District review. This procedure would allow Eng. Div. to submit an agreed upon package for District review.

More and more emphasis on tight schedules and minimal budgets, as well as limited manpower has forced Engineering quality to decline. When the work load is about 150% and budgets on midsized projects (DPRs, etc.) are low, we are forced to design products quickly without adequate examination and review. In addition, having to constantly respond to micromanagement budget and schedule requests from LCPM takes away valuable design time. The majority of my time is spent working on budgets, schedules, and other project management issues to submit to LCPM or Planning.

There are too many levels of management which place more emphasis on money and schedules than on producing a quality design. This tends to discourage the designer from trying to produce a more cost effective design. The designer has to spend a disproportionate amount of his/her time on estimates, schedules and budgets, than on technical design. We often get criticized for our cost of doing business. This is due to the high overhead rates required to support the multiple levels of management. To be more competitive, our overall project

ENGINEERING COMMENTS (CONTINUED)

management could be more efficient as is accomplished by many AE firms. A more definitive procedure should be developed for requesting work tasks or review. At present, much of the requesting from project managers is by informal correspondence and/or verbal requests directly to an engineer. While this may be OK for minor items, it seems as though the use of more formal procedures would be in order on most items. At least this would keep supervisors on a section and branch level better able to manage their manpower and set priorities for work tasks.

I think engineering fails to look at the overall work load of all studies put together, and consequently we get way behind schedule. I answered this from the standpoint of the study/project sponsor. I did not answer this from my standpoint as a study manager requesting work from other engineering elements. I question whether all of the reviews conducted in the Corps are worth the cost. Perhaps the biggest obstacle to progress of studies is the changing regulations and policies. We're not very fair to the sponsor when we keep changing the rules. We need to provide more grandfather clauses.

OTHER--VARIOUS

(CivilSec) As an engineering employee, it is very hard to judge engineering objectively. I know from a personal point of view, I feel very frustrated in the fact that other than engineering sections and branches, everyone else appears to be constantly growing (overhead) at the expense of engineering. I would like the Corps to continue to be the best in the world, but the emphasis must be placed on the producers of the product. The Corps continues to make the mistakes big business made during the 70's and early 80's by adding too many managers instead of giving the responsibility to the people that want it. Emphasis needs to be placed on the producers in order to stay competitive. Please don't create more wasteful paperwork and update sheets that reduce productivity because of this ridiculous survey. I notice from the distribution list that only 2 producers of a product from engineering division were given this form out of 8! Why are they asking 2 out of 8 that produce design products for recommendations? My point exactly!

(CECost) Engineering should be evaluated more on the quality of work and cost and less on schedules. A method of evaluating engineering based on the number amendments and mods issued for each contract should be looked into. When the quality improves, the number of amendments and mods should go down.

(DesEngr) Issue # 14: Not enough qualified technicians in design. Issue # 20: Eng. Div. is not always at fault, some users are non-responsive to requests for information. Issue # 22: Eng. Div. needs to work with CD to identify "continuing" problems. These need to be divided per discipline and provided to designers on an ongoing basis.

(DesEngr) There are too many managers -- not just in engineering but within the whole District structure. Life cycle management is not working. There is a need to have managers who have a good technical background and who understand the process of design. The District has so called "Technical Managers" who have not spent one day in a technical design position, yet their job description is such that they are to provide technical advice and assistance to those individuals who do the "grant work" in the design phases. Life cycle management is composed almost entirely of former "planning division" personnel who know nothing about technical design, yet they are

ENGINEERING COMMENTS (CONTINUED)

responsible for a lot of the technical decisions that are made. To me, this isn't the direction that the Corps needs to keep heading in order to be a cost effective, competent, and competitive engineering organization of the future. It is also disturbing to me that other organizations within the District, (i.e., Finance & Accounting, Management Analysis Branch, Personnel, etc.) are the dominating forces within the District. These organizations are telling Engr. Division what it can and can't do and they are the ones driving the train. Are we not the Corps of "Engineers"? Lately, I feel that engineering has been downgraded to such a level that we ought to be called the "Corps of Accountants."

(Designer) Maintaining realistic budgets and schedules is more critical than whether or not schedules are met. EPA and State environmental work rarely provides a schedule which is real. Providing designs before the predesign information is received not only impacts schedules, but results in a huge amount of money spent on lost effort. Communication between Environmental Branch & Design Branch need much improvement. Other elements of Engineering Division do not appear to have the same problem. Since a great majority of Environmental Branch personnel are new to the District and/or Corps, training should be provided. I believe this is crucial to have effective accomplishments of all 25 issues listed. Delivering products on schedule is very important to the Corps reputation. I believe the District would benefit more by following my first recommendation (to provide pre-design data before creating a design schedule) and then strictly track schedule/budget progress. I feel that this would improve cost-effectiveness in design, as well as meeting schedules that would provide quality products to our customers that are complete. This would also demonstrate the true requirements for design with realistic, obtainable expectations to our customers; instead of overly optimistic and unrealistic (expensive) demands.

(Engr Mgr) Many engineering products do not meet customer need because the customer does not understand what he needs.

(Oth) Issue # 3: Team formation and communications between teams, chiefs, and experts are vague. Issue # 11: Too much conflict with sponsors. This is improving. Issue # 22: Need periodic inspection of LPP by engineering.

(Oth) The Corps needs to reduce effort required to track funds!! Do a survey on how many manhours are used to "track" funds expenditure. We're a design and construction agent - let's do what we do best!! Contract out funds tracking after eliminating it as much as possible. We have some projects with 16 cost codes in COEMIS (whatever the current name is). Eliminate PPMD functions on small civil and military projects. Eliminate PRBs at Division and HQUSACE level! Make user requested changes harder to approve. Require better DD1391s and PDBs. Engineering has too many ARs, ERs, ETLs, AEIs, EMs, TMs, EPs, Guide specs, Fed specs, etc. Let's simplify based on "value added" approach. Use simplified design more. Raise district indefinite delivery contracts to $1M with $150K work order limits, or even higher. Contracting is too much involved in AE contracting. Engineers know what they want and how to get it. Simplify our requirements.

(Oth) Engineering needs an effective means of tracking real-time cost charges against products to control expenditures.

ENGINEERING COMMENTS (CONTINUED)

(Oth) Engineering Division should be requested to rate Planning Division - there are much needed improvements/efficiencies to be gained/achieved there. Issues # 6 & 8: Small projects are very difficult to manage with limited funding and a punch list of procedural requirements. Projects less than $200K in total construction costs should be waived of Division/HQ level review. The Districts should be given more flexibility in determining the adequacy of non-life threatening projects without a multitude of insignificant comments from Division/HQ. Let us get these projects built! Issue # 14: There seems to be a growing trend that engineering division is forced to do a majority of work for planning division. More time is allowed for developing conceptual projects in lower level studies than is allowed/available to complete DM's plans and specifications to build these projects. The priority system is completely inverted, and should be corrected.

(Oth) My work is principally with installation support (reimbursable) work. We must get our costs under control, or those customers who hire us to do designs will go elsewhere.

(Arch) What is the importance and level of the architect's role within the engineering community in the Corps and in the private sector? I feel there is a disproportionate burden placed on Corps architects to deliver a value-engineered engineering product that meets the customer's requirements.

(Arch) There is a duplication and/or redundancy in project management and other non-design services that are driving the cost to our customers too high. In other words, our overhead is prohibitively expensive.

(Arch) Providing a quality product on schedule and within budget is an ideal goal. However, there are far too many instances when schedule becomes the ultimate driving force behind the project. Quality is then sacrificed due to decreased communication and technical thought process and product production. Quality should be our primary goal. Customers only remember what they have before them daily - the "finished product".

(EngrMgr) Projects are over-managed. Management needs to be at lowest level and decisions made at lowest level. At present, we have a design team leader (manager), an engineering manager, and a project manager, all on one job. An engineering manager does not have enough authority to run a job successfully. The designers should concentrate on a job, not stop a job on small changes requested by users, etc., waiting for a determination as to whether it is a scope change (a management problem). We are fully CADD capable, and there is no reason why better coordination between engineering disciplines does not occur.

(ElecEngr) Lack of flexibility is directed from higher authority.

(Engr) The organization of engineering division is outdated and too fragmented. It served us well for large, long Civil Works projects with many specialties and independent units, but is inefficient and too complex for fast moving military construction projects. Coordination between disciplines is very time consuming and uncoordinated. Section chiefs spend too much time out of their sections attending too many meetings and not enough time coordinating the work at the designer level. Each section chief should not have to constantly be interrupting designers to make

ENGINEERING COMMENTS (CONTINUED)

manhour estimates for numerous projects. There is too much duplication of effort. A select team of experienced people should be able to come up with a realistic design effort for all the projects and inform the disciplines of the amount of time they are given. The Division needs to determine where its critical needs are and allocate its limited resources accordingly. We can no longer afford to have unproductive people in critical design areas. The review process of personnel in priority areas needs to be carried out properly. It has been ignored too long. Engineering division can no longer conduct itself in a "business as usual" approach.

(Engr) Need to improve non-technical support and improve paperwork flow and provide good, quick, non-time consuming tools to deal with repetitive tasks before tackling issues on above list.

(Engr) Regarding #14: Engineering has too many people. We could trim the staff and produce the same if not better product. #17: We have too much review at the Division level. #24: Some of the current policies and criteria are outdated and should be revised to incorporate current techniques and methods. #10: unfortunately engineering will simply revise a schedule if one can not be met.

(EngrMgr) I work on small projects, so the answers will reflect small project experience. Issue # 9: I assume my requirements are synonymous with district and Dept. Army requirements. This action may dictate the quality of the work, so I, as an engineer, need to set up realistic requirements commensurate with the job. Otherwise the end product may be over designed or under designed, depending on source of requirements (i.e. rigid criteria from ER's and EMs for low intensity job.

(EnvEngr) District and Division have a difficult time in meeting Issues # 23 & 24 due to restrictive regulations and guidance from USACE. Issue # 6: Engineering usually has a hard time with this due to expected milestones forced on the Dist/Div due to user changes or lack of environmental/utilities support studies. Installation Master Planning needs more emphasis in order to resolve siting, environmental and/or utility issues during the design of MCA projects. There have been many instances where the Dist/Div had to revise the installation Master Plans, updating envr./utility data while designing the MCA project, and still meet the project milestones. All the issues listed are important to Engineering, but it is dependent on the information provided by users/installation. We try to provide our users the best with the information and timeframe provided.

(GeoEngr) Most of the current problems are related to insufficient staffing for the workload and in the high level of turnover in mid-level managers (i.e. Section Chiefs). There is also a lack of computer and drafting support.

(HydEngr) The technical quality of our products is constantly being sacrificed to meet budgets and schedules. This begins at project initiation and continues until the product is delivered. The products to be delivered are generally so broadly defined that the scope of work is unclear and almost any product will meet the technical requirements. The technical content of our products often depends more on the experience and judgement of older engineers than on state-of-the-art engineering. Hiring and retaining competent engineers is becoming more and more difficult given the emphasis of schedule and cost over technical content, and the higher grades (i.e. more money) in Project Management, and the potential for RIF's.

ENGINEERING COMMENTS (CONTINUED)

(HydEngr) [We are] continuing efforts towards workload resource balancing.

(HydEngr) The Engineer Division needs to be encouraged to remove incompetent employees and replace them with good employees.

(MechEngr) We seem to still be stuck with the concept of delivering a product on time, whether it is finished or not. Schedule is still the main focus with little attention on whether there was even enough time to do the job. While on schedule, within budget, and quality are extremely important, we have lost sight of the fact that these items are of equal importance. We must deliver all three. Delivering goods on time and within budget does no one any good if the product is lacking. Most of the questions asked in this survey cannot be adequately addressed by the answers given to choose from. This looks like the type of survey where any results can be made to look real good.

(MechEngr) Review process becomes too long and cumbersome - need to limit reviews only to designer, user, and builder (const. div. at district level). Division level and higher should be concerned primarily with policy and criteria; not specific project review (i.e. give us direction on how we can improve our engineering process, not how a particular project should be designed). Cost of design and construction of all projects, both large and small, must be better controlled/reduced. One suggestion is a review of engineering design criteria and elimination of those which are not cost-effective (e.g. requirement for evaluation of the applicability of solar energy for a project when solar energy has repeatedly been shown not to be cost effective for previous projects in the general area). "Lessons learned" should include positive feedback to the designers - tell them what works as well as what doesn't work. Project schedules should be based on realistic and reasonable dates and goals. Delivery dates should be based on more than a person's "gut feeling" that it should take only a certain amount of time to design and build a particular project.

(ProjEngr) I believe that the main reason for any inefficiency in Eng. Div. is due to the lack of knowledge of project requirements. It is impossible to remain on schedule and under budget when the scope of work constantly changes.

(ProjEngr) Quality is never an accident; it is always the result of high intention, sincere effort, intelligent direction and skillful execution; it represents the wise choice of many alternatives, the cumulative experience of many masters of craftsmanship. Quality also marks the search for an ideal after necessity has been satisfied and more usefulness achieved.

(StrEngr) In my opinion, a contributing factor towards the decline of design quality is the fact that the design team seems to be growing more and more apathetic. The designers, after truly seeing their projects through their "life cycle" take back stage to the so-called project managers. It is apparent that advancement opportunities for designers are fewer than those for project managers. In fact, the prevailing attitude seems to be that a "number cruncher" can be obtained from under any available rock, yet a project manager is an invaluable asset.

(StrEngr) Technically, Engineering Division is an excellent unit to work for and with.

ENGINEERING COMMENTS (CONTINUED)

(StrEngr) To provide a quality product requires experienced engineers. Advancement opportunities are limited and experienced engineers leave to move into other positions. High school graduates have been trained in other than engineering positions and earn more than engineers with Masters Degrees.

(Other) Need a few more journey man level engineers to support experienced engineers who may leave the Corps when job market is better. Should develop a good tracking system to monitor the design expenditures. Need more close coordination between plans and specs prior to advertisement. Designers always need drafting help to complete projects on time -- need to hire a few more.

Blank Page

III. CONSTRUCTION COMMENTS

DIVISION CHIEF

Currently we do not have a good feedback system for both AE and in-house work at the end of construction. Also, from my point of view, we need the designers on the site early-on during the construction, both AE and in-house. I know we are working on costs. I don't really know the details, so I probably should have given no rating on those issues instead of average.

With emphasis on "contracting out," technical expertise is slipping. With emphasis on managing, ability to do is fading. Corps is on a downhill slide.

Engr Div. has lost some valuable experience in retirement of senior personnel although this may not be so visible in the near future due to decreasing size and complexity of the civil program.

There is too much concern nowadays with meeting schedules -- we turn out too many products that are 80-90% complete. We pay for it with construction mods and claims. Forget the schedules!

Issue # 14: Eng. Div. presently has too many on board.

The importance column troubles me, on the one hand I don't believe all issues should be equally important. On the other, I found it difficult to rate these particular issues on a 1-5 scale. They are all important.

Issues # 8, 16 & 17: There is too much "higher level" review of not only Eng. Div. products but also of the products of PPM. The current level borders on micromanagement - a process which inherently bogs down the system, resulting in execution delays and the real dollar costs flowing therefrom. Eng. Div.'s costs, just like those of other Divisions are high, but the answer to reducing those costs is not merely reducing resources. Corporately, you need to seriously look at reducing the requirements that are placed on us. You can't just keep cutting back on the horse's feed, and at the same time keep putting more on the wagon. From another perspective, we need to look at our contracting procedures with a view toward reducing costs. There is just no need to put the same administrative level of effort in a $30K contract as in a $30M contract. Finally, in our District, we believe in Partnering and realize that partnering starts with developing and fostering the "WE" attitude between various Divisions in the District. It works for us - Eng. Div./CD have an excellent working relationship - we don't always agree, but we have a non-adversarial forum for resolving our differences and getting on with the tasks at hand.

CONSTRUCTION COMMENTS (CONTINUED)

BRANCH CHIEF

Our Engineering Division is very highly qualified and provides good service and a quality product.

Engineering Division has too many ineffective managers, too many unproductive employees, and too few competent technical engineers. Overstaffing and micromanagement have created ambivalent employees.

One suggestion is for the design staff to develop their own "trap lines" of industry representatives that will keep them advised of "state of the art" - then use them. Engineers need to have curiosity about how things work and/or go together. They need an interest in learning - the education is never finished. It's not an easy job, being a designer, but I think the field people appreciate those engineers who are interested in how their work is constructed and in learning from that, either from the mistakes or pride in the good job.

Engineering has competent people. Ideally they need direct exposure to construction, customers, and contractors.

Eng. Div. strongly resents any comments or feedback on its quality.

Because of budget/time constraints, review and incorporation of existing and "as built" conditions is not as exhaustive as it could be.

BCO project documents lack quality. Perception is that AE contract fees are negotiated so low that quality is compromised; assigned designers lack experience, are not responsive, nor held accountable. Projects are (or seem to be) still being designed during the BCO process and AE may be counting on this process to correct errors.

Involve Construction Division in formulating its initial design requirements (teamwork). Overdesign is common - unnecessary restrictive requirements. Everyone is burdened by too many regulations.

Efforts are being made to change and increase quality and responsiveness that need to continue.

Need to still figure out a better way to get timely mods.

I believe more thorough field work should be provided, especially on DERP projects, prior to design activities. There seems to be a lot of modification work occurring at the beginning of projects because item(s) are overlooked in initial site visits. Pre-design visits should include reps from construction division and client/owner to insure, #1, that client understands scope of work, and, #2, that we provide the client with the parameters that will govern the outcome of the completed project. Further, client should have all the interested parties (envr. groups, health regulators, public safety personnel, etc) with him to preclude "surprises" after construction starts.

CONSTRUCTION COMMENTS (CONTINUED)

Slowness in AE contract revisions, i.e. contract to AE contract, this delays construction. Customer satisfaction is poor. I get good results out of some of the various offices I deal with, and others that I deal with are less than satisfactory.

Designs should be complete and Plans and Specs given for BCO review sooner. BCO reviews are done while plans are on the street too often.

Issue # 6: OMA contracts do not have adequate field review during design. Issue # 15: Plans and specs are not complete at time of B&C review.

Issue # 11: I believe we give local sponsors more than they need.

Construction is in Eng. Div. Comments address Civil Works. If Superfund projects are included, the level today would be on average 3.

Estimates for mods/changes on O&M contracts don't seem to be of any priority to cost engineering.

Stop expecting the field to correct design problems through modifications.

Engineering needs to pursue internal partnering in the production of their products. Engineering needs to accept the existence of PPMD which is here to stay.

Improve quality of design/build specifications.

Users want a better quality material finish - exterior and interior (e.g., wallpaper instead of masonry).

Engineering has too many people that take too long and the field has to clean up the design errors. They take exception to feedback and attempt to discredit whomever brings up a deficiency. Engineering never made a mistake, even after the ASBCA rules against the government. They refuse to change verbiage as "we have always done it this way and the intent is obvious." Even with blatant evidence of the necessity of a change order, there is a witch hunt or red herring thrown up to say the construction people made an error. If we wait for engineering to complete plans and specs on a change order, all contingencies will be used in design and the job will have a 90 day delay, 70% of the time. We continually have to pay travel and time out of S&A for correction of design errors. AE designs are better (usually) than in-house.

The quality of in-house plans and specs has been uniformly good; however, that of brokered and AE designs has been varied.

ENG should constantly try to improve products and avoid costly design mistakes by reviewing past mistakes and have serious review during design. Additional resources from Const. and Contracting during reviews are necessary.

CONSTRUCTION COMMENTS (CONTINUED)

Civil design within our district is much better and more responsive than the Military design side.

Civil Works function has been outstanding, much better than Military side. LCPM has been very good here.

The construction of an in-house designed project is a challenge and usually not affordable. The designs, in comparison to designs by AEs, have more errors, omissions or because all of the design funds were expended or the award schedule had to be met, the designs are incomplete. To compound the problem, the project must pay to have Engineering Division design the correction to their mistakes with no potential for recovery of the resulting tear out, rework, or impact costs.

Need a review process for in-house designs to ensure the design is complete and all of the various design discipline drawings have been coordinated with one another.

AE contracting procedure is flawed - slow and incomplete. Shop drawing options never seem to be exercised on time. Review with installation doesn't seem to happen effectively.

SECTION CHIEF

Regarding "Engineering is responsive to your requests for products/services" and "Engineering provides timely products for changes to contracts" -- Engineering does not have a "sense of urgency" when dealing with contract changes or reviewing contractor submittals or requests. Time is critical on most construction contracts. Regarding "Engineering has an effective "lessons learned" system -- we seem to make the same mistakes over and over.

Obtaining more coordination with construction and giving more attention to "lessons learned" would eliminate modifications during construction.

With the advent of CADD systems (both in home and AE), there is no excuse for layout or dimension errors ("adding down and across") that presently occur on 100% of all our construction contracts.

Issue # 17: Limited time is afforded to field personnel for BCO process. Plans and specs are often not substantially complete at time of review. Although design is technically adequate in most cases, methodology of is not one that mitigates costs for contract administration by FOAs. It is perceived that construction oriented comments are often not adopted or exception is taken for reasons of "pride of authorship." In general, we continue to experience significant problems with coordinate geometry discrepancies in CADD projects (i.e., Intergraph). It is uncertain whether origin is one or several of the following: digitization of topographic data, software problems, operator error, conversions (i.e., state plane to ground grid), and/or project layout from multiple baselines (i.e., alignment of structures not tied to easement - they are detailed by independent geometry, resulting in conflicts and inadequate right of way during construction).

CONSTRUCTION COMMENTS (CONTINUED)

Generally, responsiveness, "customer care," and lessons learned are unsatisfactory. Engineering spends too much time justifying their original or current position and not enough addressing issues. If a change order is identified as being caused by a "design deficiency" or "defective plans and specs," the reasons for that assessment are not addressed but time is spent telling the originator why it is not "their fault." Canned specs may be partially to blame. Perhaps the engineering review process should consider more closely the adequacy of technical specs. Repetitive deficiencies in plans and specs occur all too often. The unique requirements of different projects are not sufficiently considered. Customer care/customer concerns are seldom given proper weight. A "lean-to" storage facility suddenly becomes a pre-engineered metal building with roll-up doors, heating, air conditioning, etc. Or our mission many be to repair leaking roofs and we, the COE, are determined to make "silk purses out of sows ears." I have never worked in Eng. Div. and thus am not aware of the pressures and guidance under which they work. This message does not address the positive things and is not intended to be taken as critical of individuals. In fact, it is the individual engineers and technicians whose dedication and ability are the strengths of Eng. Div. However, as a group organization, Engineering has to become more responsive, more customer care oriented, and more timely on their performance.

It is very difficult to generalize. Most CW designs are good, but isolated cases, done both in-house and by AEs, have much room for improvements.

Issue # 24: At district level, EN is very flexible, but "higher authority" greatly restricts flexibility.

Better cooperation should be encouraged between engineering, operations and construction. The team concept should be stressed. Small projects are too costly and too cumbersome.

The most important issue to me is consistency in our specifications. I feel we do not do a very good job of that. Engineering support on issues and clarification is excellent.

Eng. Div. puts out products on schedule only. The schedule determines the quality of work. The schedule controls, and if the design is not complete, it is put on the street anyway. People in engineering will tell you that designs not complete are put out for bid, as they must meet the schedule.

In this district, schedules seem to override quality. The majority of our designs are done by AEs. This fact, coupled with retirements of our more experienced engineers, results in engineers with little or no design experience monitoring AE contracts. The long term effects of this situation will be devastating to our engineering workforce and the future quality of all our engineering products.

Most important issue to concentrate on is consistency in specifications.

Engineering needs to flatten the organization with fewer supervisors to speed up response to customers. Fewer supervisors means trusting the workers to do the job they are hired to do and depend upon them to do it!

CONSTRUCTION COMMENTS (CONTINUED)

Issues # 7 & 10: Design is often late! ConOps is impacted in planning workload, personnel, budget, etc. - Const. support in resolving design deficiencies is very timely. Issue # 11: Mostly due to lack of input by Air Force installations.

Comments are based upon one project only - taken over by this office during construction (design period performance unknown). Timeliness for changes was poor as resources were apparently committed to large projects.

This district is not good at coordinating between disciplines. They each seem to be doing their own thing with nobody to put the package together.

Too often quality suffers due to schedule. Const. Div. is forced to do quick reviews on insufficient plans and specs.

Close review of contract specifications by the technical design elements would greatly improve the quality of plans and specs.

Issue # 17: We assumed AE designs are considered engineering's product for the question of adequate review.

Cost estimating products for changes are neither accurate nor timely.

With the large number of projects at the airfield it would seem beneficial to develop a team concept. Currently, every project has a different designer and issues critical to the airfield do not get resolved. There is a new learning curve for the designer on every project. We must be more attentive to the user's needs and learn to ask questions. Please do not accept the user's request as gospel - we must, as technical experts, advise them that some requests are not practical. We are their "consultants" and must keep them advised at all times.

Engr support and design quality has been good but they don't seem to recognize the need to provide fast responses/answers on construction problems. Our constr. contractors have all complained.

As with any organization, the quality and success of its work is dependent on the individuals involved. Some of the products are prepared by in-house personnel and some by AEs. There are successes and some deficiencies in each side. As a whole, Engineering is above average.

There is not enough Civil Works done to make a meaningful evaluation.

Design intent, especially in electrical area, is often not clearly expressed in contract documents.

Engineering is sometimes very reluctant to accept a construction mod as a design deficiency. This slows the mod process and costs extra dollars. Engineering is also sometimes very reluctant to adequately review VE proposals during construction or more cost effective ways to resolve a problem via modification, especially when it questions the design as an overkill.

CONSTRUCTION COMMENTS (CONTINUED)

Design, especially on DERP projects, is improving as the program continues. Feedback is being incorporated in future designs.

The performance plans of Eng. Div. managers should be based on quality of product not meeting the scheduled bid date.

Issue # 6: Site inspections of proposed projects conducted by Area Office personnel revealed numerous oversights in proposed plans & specs. Improvement in this issue should help quality of Issue # 18. Engineering design considerations (submitted to field personnel) for projects used to be routine prior to initiation of work. Currently they are not being submitted to the field.

Interdisciplinary coordination is very poor. People don't seem to give a damn.

Overall, I believe Eng. Div. does a very good job for civil works product quality.

In our district there is a clean break between Construction and Eng. Div. Eng. Div. appears to be driven only by schedule with little or no concern for quality. When problems arise in Construction, the attitude of many Eng. Div. personnel is -- I'll get to it, when I get to it; don't rush me! Construction, where time is money, often times cannot wait and must get answers elsewhere. These different mind-sets often create problems and conflict. As it is not possible to slow Construction requirements, I strongly suggest Eng. Div. accelerate its responses to Construction problems/inquiries.

Issue # 17. Engineering's review process is totally inadequate. 50% of the time important "show stopper" type comments are left out of final documents and results in high cost modifications. It appears Engineering's top priority is time, i.e., it must meet its final design completion date for its design documents at any cost. Low priority issues, it appears, include quality control/quality assurance of the design documents; performing site visits before and during design; discussing scope and construction techniques with construction personnel at the field level.

OTHER--CIVIL ENGINEER

Schedule appears to always be a higher priority than quality design.

It seems to me that so much of our design work revolves around the "rehashing" of existing products and projects rather than an original fresh review of the engineering task at hand. This approach doesn't leave any room for the incorporation of technological advances or new innovative/cost effective ideas. After working with the Engineering Division first-hand for this past year, I've come to realize that we have intelligent, cognizant and conscientious engineers who desire to put out a quality product; however, without the freedom to use their intelligence to develop innovative approaches, we can never expect to meet the challenges that a competitive and cost-effective district is sure to encounter in the years to come.

CONSTRUCTION COMMENTS (CONTINUED)

Engineering is generally overconservative in their designs and spends too much time and money in developing design documents and plans and specs. Engineering often does not obtain accurate and updated survey information, usually citing lack of funding or time as the reason. This often results in claims and contract modifications due to differing site conditions. More effort is needed in communication between Engineering Division and Construction-Operations Division during the various phases of a project.

It is so difficult to get support from support groups such as IMO, mail room, etc. There is no proper training, even though we are investing a lot of money in computers and other systems. I think training is a must. Also management should go after employees who do not produce satisfactory work on time. Are you going to do anything after this survey? Also, let me give you one more important comment - people who work hard and produce satisfactory work on time are underpaid 20-30% compared to local governments and private industry. Think!!

Issues # 17 & 18: These go hand in hand, since specs do not receive adequate reviews, they are never complete for construction contracts. This problem is not just Engineering's fault. Construction Division does not seem to have enough time to review the plans and specs because they are always too busy correcting errors and solving problems with on-going contract drawings and specs, because they were not adequately reviewed. Somehow this cycle has to be broken. A team from Construction and Engineering needs to be provided, whose main function is to review drawings and specs prior to award.

Our in-house E&D cost is sometimes 20% but we hold AEs to 6% - we need to cut our cost of design work.

In my work with contract modifications (of which there seem to be too many) I see errors in design, and Eng. Div. seems overprotective of their AEs.

OTHER--VARIOUS

(ConsMgr) Eng Div would be greatly improved with the infusion of personnel with field experience. While the present personnel are dedicated and professional in their attitude, most lack the breadth of experience to enable them to appreciate what delays and poor design do to the field. The impressions that are created with the user (be they correct or incorrect) and the financial impact. Perhaps Eng Div (District level) would have a parallel argument against Construction. My answer and solution to improved products by both Engineering and Construction would be improved communications and cross training. LCPM may be a viable avenue of improvement.

(COR) Responses represent designs for Superfund work. Issues # 13 & 14: People are competent. Mechanical Engrs are non-existent for solving field problems during construction. Issue # 25: "Lessons learned" program is not well publicized within COE. Suggest formal design reviews with construction personnel during construction. DDMs and 3908s are not always getting to correct people/directorates.

CONSTRUCTION COMMENTS (CONTINUED)

(Engr) When money is available, designers should visit construction projects frequently to be "tuned-in" to the actual methods, procedures and standards by which the work is accomplished.

(FldEngr) Issue # 19: The response to design initiated changes has been very timely. The response to field initiated changes or to differing site conditions has been somewhat less.

(MechEngr) Engineering needs to have all projects (including AE projects) reviewed by in-house review teams.

(MechEngr) Sometimes in an effort to meet the time schedule, which seems to take priority, the product plans and specs are not sufficiently reviewed and corrected. This causes expensive changes later in the contract. Engineering is flexible or liberal with policies and design criteria as long as the initiation comes from engineering. However, if a recommendation/suggestion is made by another source, many times policies are used as a reason for not using the recommendation.

(ProjEngr) The "intent" of a project should be clearly defined through close coordination with the user. Herculean efforts must be made by engineering project managers to involve the user/owner throughout the project life. The user must be kept directly involved to insure mission changes are incorporated into the design. My observations find that too many project managers resist changes from the user. Little to no flexibility exists in the USACE engineering management philosophy. Often the user does not have adequate personnel to articulate engineering needs, but they do understand their Agency's mission needs. Too often engineering project managers appear to obtain initial design criteria, and proceed to "shut-the-door" on the user until final design is produced. Final design is not the time to entertain alternatives/changes to design. Changes that the user is successful in obtaining at final design are often "pushed" and inadequately incorporated into the bid package. I recommend that a clear "letter of intent" be produced and frequently updated by the user and project manager. All engineering elements, to include construction personnel, should then be kept informed of the project "intent." I worked for three years representing a USACE customer, and learned/experienced USACE from a different, yet very important, perspective. I continue to incorporate my personal "lessons learned" doing business as a project engineer. I maintain a high regard for USACE and am concerned that we project the right image and substantiate our image by meeting our customer needs.

(ProjMgr) Sometimes installation does not know all of their requirements. People get "burnt out" doing reviews all the time. Specs are frequently on products or procedures that are out of date. New products on the market are frequently better (technical improvements) but not usually acceptable because they are new. COE design is "behind the times." Frequently compared to private industry. Paint chemistry is a prime example.

(ProjEngr) Engineering has helped a lot during construction by visiting the site. Not enough soil borings were taken before design and bid, resulting in changes due to differing site conditions. Also, there are many dimensional errors and rebar errors in the drawings done for our contract.

(ProjEngr) Engineering response to design changes and follow up field visits are very good. Plans and specs have been going downhill for the last 5-10 years.

CONSTRUCTION COMMENTS (CONTINUED)

(TM) PPM is placing so much attention on cost & time that quality has become the lowest priority. Quality should be #1 with COE. Our products need to be more than technically adequate. They must meet the sponsor's/customer's needs and be the best design. Although costs and time may adversely impact the sponsor/customer, they always remember the quality of the product.

(TechMgr) Cost engineers' estimates leave much to be desired. They are usually much too low and don't reflect "real world" conditions.

(Oth) Add an Issue # 26: Engineering cost estimating, Importance 5, Level Today 1.

(Oth) Construction support section must be adequately staffed to answer RFI's and provide technical support. This kind of work requires a cost key, and when they run out of money on a project, we sometimes have difficulty getting answers.

(Oth) "Level Today" grades: level is composite of products received. A few products are of good quality, but a good number are products that can be greatly improved. Repetitive deficiencies - typically typographical errors, unedited specs, conflicts between plans and specs, etc. appear to be a minor issue to engineering (a number anyway - from staff to supervisor), especially typos. Errors and unedited specs become a non-issue to engineering come bid time. This of course causes construction to suffer the consequences. Issue # 13: Although a number of engineering personnel do a commendable job, others are quite "lost."

(Oth) Major problem facing this office is changes within CT Division.

(Oth) It seems like we have the same mods and claims repeatedly. Any communication between Eng. Div. and CD regarding changes and claims is apparently not working.

IV. PROGRAM AND PROJECT MANAGEMENT (PPM) COMMENTS

DIVISION CHIEF

We are currently reorganizing Engineering to programmatic configuration which I feel should create a sense of team with PPMD and construction. Competition between programs for scarce resources should be essentially eliminated and the program leadership should be focused on a joint goal. With this new configuration everyone in the program should be working to bring the jobs in the program in on schedule, within budget and at a reasonable cost. Communications should be easier and people's focus on their program will be increased. Individual performance standards can then be tied to the success of the program and the leadership team (PPMD, EN, and CO) can be rated accordingly.

Engineering needs improvement also for Issue # 17.

In my view, any shortcomings are the result of too much work versus the resources (manpower) available -- in most cases.

BRANCH CHIEF

Learning to excel is difficult for all of us - we are already good, but need to learn to excel!

We are quickly reaching the point where it is unfeasible to do major design projects with in-house staff (including labs such as WES and CERL).

We need to devote more FTE to technically competent people and have fewer managers and admin types (in the District as a whole).

Although I filled out this Civil Works form, my work involves Hazardous and Toxic Waste studies and designs for the EPA Superfund, rather than traditional Civil Works. By far, biggest problem is not having sufficient Eng. Div. staff to handle the workload because of artificial personnel constraints and not being able to retain personnel in the highly technical HTW area, because the salary/grade structure is too low. We lose people to private sector and also to other government agencies.

Issue # 7: key word is commensurate; more is not better in areas of limited resources. Issue # 11: requirements are often proceeded with (?). Issue # 25: impact of change costs much time and $ due to lack of coordination. It's the "hurry up and wait" game.

Division review/approval requirements are excessively slow and inconsistent.

I am involved in Hazardous and Toxic Waste studies and designs under DERP. My biggest concern is not having sufficient Eng. Div. staff to handle the workload because of artificial personnel constraints and not being able to retain personnel in the highly technical HTW area because the salary/grade is too low. We lose people to private sector and also to other government agencies.

PPM COMMENTS (CONTINUED)

I deal with Emergency Construction under PL 84-99. Engineering designs should be consistent with budget available and other needs, such as expediency. A quality product must be weighed against getting the job done with funds available.

We as a Corps institution need to provide quality products (as the customer defines quality) - studies, designs, constructed facilities.

We are losing Engineering expertise due to declining workload. Corps needs to reorganize and consider design centers.

SECTION CHIEF

A lead tech section should be tasked with overall project coordination. Arch/mech/elect/ plumb must all mesh. Small projects with small design budgets must be afforded relief. Suggest unit price cost estimates be allowed.

OTHER--PROJECT MANAGER

On larger construction projects, Engr Div needs to keep a master set of current, pending and executed changes during construction.

Understand scope, communicate design, keep within budget and schedule.

The most difficult problem is for engineering to predict all the possible criteria or scope problems that cause additional design cost and constantly drive up engineering budgets.

Current heavy workload has adversely affected quality and management. Corps future workload remains unclear; difficult to staff accordingly.

P&S also need to be accurate and internally consistent.

Tech management is a CRITICAL area requiring stability and continuity, but due to high stress and low grade structure (GS 12) there is a high turn over and loss of project continuity and developed skill.

From Eng. Div., now in PPMD, can see shortfalls within Eng. Div. more clearly.

The designers need to report problems, which may affect schedule/budget, on a more timely basis to their supervisors as well as the PM.

There are some success stories in implementing Project Management by Engr Div, but there are clearly some major (hardheaded) pockets of resistance.

PPM COMMENTS (CONTINUED)

Overall, I would give Eng. Div. high marks. Areas for further improvement are producing cost effective products, having the correct number of people to do its mission, and delivering products within budget.

Overall, our E&C Division is doing a great job. The district needs to be given more latitude and flexibility to adapt to project specific areas as regards Issue # 24.

With discount rates over 8%, using design criteria of 50 years is unrealistic. Either adjust the 8% or assume the risk. Designs are clearly too rigid and expensive for the economic criteria.

The area which never ceases to trouble me is the "fact" that even though we may do the same type of project over and over, each set of P&S reads differently, noticeably differently. There does not appear to be consistency between the contents - technically (specs) - and elements (what shows on plans) between jobs. I realize each project site is uniquely different, but the process and contents seem to be generic to me (specific areas are underground storage tank removal contracts).

Grades are no longer competitive with other agencies. Our district is experiencing a continuing loss of the best engineers and project managers. We need to develop better methods/organization/mind-set to design smaller $ projects. We can't afford to involve as many offices. We must assume more "risk" or possibly lower quality to meet customers' time and cost constraints. This is counter to our long established culture. Faster, less expensive designs also mean that we need to eliminate or grossly abbreviate some of the PPMD (ER 5-7-1) proposed management, oversight, and reporting requirements. Unproductive effort raises costs. Smaller projects are particularly sensitive to this - and our customers are increasingly sensitive to our design costs.

Overall, Eng. Div. is very responsive to work they take on. However, meeting schedules appears to be difficult at times due to lack of adequate manpower. In some instances, project coordinators aren't aware of problems with design until the last minute. Open communications are critical to full success for any project development.

Eng. Div. needs to get on board LCPM at the branch and section chief level. The chief of Engr. is on the PRB and the tech manager is on the team, but the mid-managers need to get in-line with district priorities.

I think there's too much hands-off management. Put the Chief, Design Branch back on the boards. Have managers review plans.

Review process is excessive.

Engineering must be flexible so that decisions can be made at the working levels and must manage human resources enough to know they have a balanced program. Load leveling and estimating future work requirements we cannot seem to get a handle on.

PPM COMMENTS (CONTINUED)

Issue # 3: This addresses generally Issues # 2, 7, 9, 11 & 24, and thus warranted highlighting as a "work on now" issue. Issue # 1: Responses to requests for budgets and schedules that are complete are very difficult to obtain. Issue # 7: We don't seem to get management guidance on a project down to lowest levels, even if from the DE. Communication problems I've observed are between the GS-15, 14s and 13s. Once the designers are given the info, they are usually very responsive.

Engineering Division needs to take this District back and again make it the Corps of Engineers instead of the present "Corps of Contracting" or "Corps of RMO."

Issue # 14: FTEs are not appropriately distributed within Engr. - many bottlenecks. Good people in Engr. are not meeting potential - poorly organized for good project management. People are not given responsibility and authority to make technical decisions or project commitments. Virtually all decision making can be shifted to "someone else." Therefore there is no accountability. There are not consistent team members for every project. As a result, Engr. people from one section rotate in and out of projects with each activity in many (not all) cases. This eliminates continuity. Therefore, products are not consistent with what is needed, issues are overlooked, and quality is reduced because background information is not available. Requests for engineering products and project related information must be passed down the "stove pipe." Information and assignments are not passed to the correct people in some cases.

My experience with District personnel indicates that Eng. Div. has very competent people who can produce an excellent project within time and constraints. However, impacts from higher authorities usually impact the Districts products more than any slippage produced by the District. With the district having such competent personnel I feel we are capable of producing an acceptable product within time and cost constraints consistently.

Designs take too long and cost too much, in both design and review costs. On a small job (Issue # 8), we can spend more on management and review than it takes an AE to design it. Designs must be done in less time -- 7-8 months vs. 10-12 months of design time for a major project. Review costs must be reduced. Some installations do not prepare well for pre-design meetings. PMs and EMs need to provide the push to get the installations to improve, i.e., have all info available and know what they want. Improve section chief involvement in maintaining design schedules and budgets, on in-house design projects. Geotech costs are too high. Also takes too long to get a report.

Engineering seriously lacks coordination and cooperation at the Engineering Manager level.

If we cannot produce a cost effective, quality product/design, we'll all be out of a job soon.

Engineering needs more people in AE contracting. Engineering needs a small group of experienced engineers to handle design of small projects (O&M) on bases.

PPM COMMENTS (CONTINUED)

Issues # 4 & 6: With 12 sections involved in a typical design project, it becomes cost prohibitive for all designers to visit the site. The question always is; "Who really needs to go and can't the information be obtained without having to physically go to the site (i.e., photos, video, or questionnaires)?" Issues # 5 & 18: The questionnaire is tilted toward products produced by Engineering. In fact, on the military construction side, most products are produced by AEs and reviewed by Engineering. Reviews are expensive and unfortunately all too frequently do not produce tangible benefits to justify the expense. Issue # 23: The Corps of Engineers generally does not embrace state of the art technology. Proven technology is preferred. Issue # 13: This is not the problem.

Need to be cost effective for projects <$1M. Need to be capable of fast response. Need to be willing to take on in-house designs for high tech projects.

Rigid lines of authority make it difficult to resolve issues quickly.

It is paramount that we get CE cost and product cost down to be competitive and affordable.

Most of these responses are very dependent upon the different people working on the project and how they operate as a team.

Engineering team managers need to "manage" his/her engr. div. assets and more effectively work as team member with other project team members.

Page's/Hatch's Project Management system is not accepted yet. Scope, schedule and budget are all parts of project quality; the attitude is always of more time, more budget. Budgets for design are a game.

The corporate mind-set must be changed from the top down. Too often, I hear "No" or "That's not our responsibility" or "We can't do that" as the first response to anything out of the ordinary...and even to the ordinary sometimes. A sense of ownership and pride for each and every Eng. Div. product should be shared by all team members. I feel like Eng. Div. is merely giving the team concept lip-service at the present time. Improvement will take time but must start at the top. If this improvement is made, improvements in schedule, cost & time will be natural by-products. I feel that our Eng. Div. has the best capabilities of any other district's Eng. Div. I've come in contact with. Striving to improve and learn a new way of doing business, centered around the concept of customer care will benefit our Eng. Divs. and the Corps as a whole.

Number of adequately "trained" personnel with appropriate equipment to do mission is an immediate need. Appropriate hardware/software and specific training are required to meet today's requirements and technological demands. Engineering's inability to staff areas of concern with trained personnel is eventually going to reflect on the quality of the product.

One problem faced in engineering originates from Divisions and HQUSACE - guidance is insufficient and tardy. The districts pay the price by being expected to play "catch up" with studies by incorporating requirements still not thought out by higher levels. The districts are then scolded for being late with the products.

PPM COMMENTS (CONTINUED)

In the past few months Engineering has been stressing accuracy of details, when in a lot of instances all the details are not needed to make a good engineering decision.

Overall, engineering division at our district is very responsive. Problem usually lies with onerous review procedures (especially lack of consistent review).

Issue # 14: Important to be flexible and not management heavy. In general, all improvements require good scope of work up front.

OTHER--VARIOUS

(CivEngr) Some products are too conservative and exceed the local sponsor's requirements. This causes budget overruns.

(AssttoCh) Engr Div currently has technically competent people but should work constantly to retain current level or improve.

(CE) Little or no coordination between branches; excessive desire for costly field data (some branches never seem to have enough information to make design decisions); little concern with costs and schedules below section chief level.

(CE) Several of these issues, as stated, appear to be repetitive.

(IPM) Engineering Division needs to do a better job of establishing reasonable schedules and funding requirements for their work. With PMPs and other management control devices, they will be held accountable for living up to their obligations.

(IPM) Engineering is burdened by inflexible regulations; some management are not receptive to changing environment and conditions; and review process is tedious and redundant.

(TechMgr) The user usually changes their mind or do not know what they want (only know by when).

(Oth) Engineering Division does not have the resources to accomplish its mission. The main internal problem is a turf war by Mech Design which results in poor design coordination with Structures and Hydraulics.

(Oth) Issue # 24: my comment regarding the poor flexibility with respect to policies and criteria is not a commentary on the District but on the organization. We spend enormous amounts of money laying down "paper trails" and very little is gained from it. We may be making mistakes today that someone in another place and/or at another time has made and there is no way to find out about it. Our "lessons learned" process is poor and probably should be because our products are so diverse that the time and money it would take to find a similar situation would not be worth the effort. So I ask myself, "Why do we spend so much time filling up filing cabinets with paper trails?"

PPM COMMENTS (CONTINUED)

(Oth) I need more technical management help, I'm still doing the whole management of projects. Eng. Div. needs more FTEs.

(Oth-DDE) I don't believe the questions and format of this survey form will provide as much useful information as hoped for.

(Oth-Detail) You should review the cost estimating process to see if it is delivering better estimates or just higher ones. The cost of making estimates has increased by about a factor of five. The amount that a District uses AEs should be carefully monitored because excessive AE causes loss of capability and initiative. The decision to dump our reproduction departments should be reconsidered. Cost comparisons should be made and the quality and timeliness of the current service to Engineering should be reviewed.

Blank Page

V. PLANNING COMMENTS

DIVISION CHIEF

Engineering products are usually good to excellent quality. Costs to get the product and time to prepare that product are more frequently a problem. We are working under a set of constraints with cost shared studies, E&D and construction. We must find ways to continue to produce a quality engineering product but do so quicker and at less expense.

Issue # 8: We need to engineer to budget, not vice versa. We can be responsive on small projects, and we are!

Cost Engineering expertise and understanding of types and uses of the various types of estimates used in COE organization [is an issue?].

Eng Div needs to realize that their future CW workloads are presently in Planning Div and prioritize support to Planning Div.

There are already ample review levels to review work done to the District; internal review is irrelevant. Use of appropriate technology is much more important than providing state of the art products. Not everyone needs a Ferarri -- for some folks a Chevy will do.

[Eng. Div. has?] competent but ultraconservative people; very little risk taking; afraid to make mistakes; this results in higher costs and missed schedules. There are internal conflicts in Engr. Div., a lack of coordination and communication skills, and an arrogance in dealing with others.

BRANCH CHIEF

At the District level, ED meets our requirements very well. The problem is that regulations and policies prevent the design of cost effective projects that the local sponsor can afford. There needs to be more risk analysis and economic analysis included in the design.

Cost estimates frequently and substantially exceed bids. Translated to planning phase, this could mean the loss of projects.

Issue # 8: Perhaps some of the most effective effort of the Corps is in CAP Sec. 205 & 14. Engineering Division effectively delivers products on Sec. 14 efficiently in time and cost. Issue # 2: This question is too general. Some offices in Eng. Div. do an excellent job, others do not.

Although many in engineering are aware of environmental laws, regs, etc. more education would be helpful.

Engineering does not receive sufficient manpower to insure the high quality expected of its design effort. This is especially true in periods when workload is increasing. The FTE allocation system does not give the District Commander sufficient flexibility to staff up the engineering function, even though the workload is increasing, while the Division and District totals are being cut.

PLANNING COMMENTS (CONTINUED)

Issue #9: To meet requirements, you have to know the requirements. Proper training may not have been afforded. It also works the other way, planning may not understand the level of engineering effort necessary for feasibility report (i.e., Engineering Appendix).

Planning is part of Engineering, so you may have responses in the eyes of Planners or they may be in the eyes of sponsors. I responded as a customer of Engineering.

Develop economical, simplified methods for hydro, design, costing for recon and early feasibility phase. Necessary to keep study costs and time frame affordable. HQUSACE must "buy in" to this.

Other important issues: 1) Innovative cost saving designs, 2) Adequate internal review of designs and cost estimates, and 3) Obtaining advice and assistance from centers of expertise.

We have some engineers in EN who develop their own agenda when working on projects for PL - with total disregard for PL's and the sponsor's needs. It is very injurious to PL efforts when EN engineers attempt to change policy or ignore environmental considerations during design. We also have some of the brightest, most capable engineers in the Corps, who do deliver what we, the customer, requests.

Compliance with environmental laws was the only consideration in my evaluation.

Services in Eng Div cover a wide variety of items. The questionnaire is too broad to identify specific problems. Responses would vary greatly by Branches within the Division.

Today's "corporate climate" is one of being customer driven, TQM and on time-Budget. The perception I get from Eng. Div. is one of "There is only one way we are going to do this, and it's going to be our way, like it or not." I currently feel that I am having to "pay" for Plans & Specs/E&D level estimate & design in the feasibility stage. Now that EN has to sign the "base line" cost estimate used in the feasibility report, EN wants 110% assurance the cost estimate will never/ever change. That's absurd. What I would like to see is a return to what used to be called "Engineering Judgement." I was told in Engineer School that an Engineer was expected to give an answer that was appropriate to the level the customer wanted and the customer was able to pay. It seems every time I deal with EN, they want to give me or the sponsor the $1,000,000 answer, regardless of the level of effort required/needed at the time. Bottom line: Some PE's need to start earning their PE's and stop hiding behind a multi-level, bureaucratic, EN management system.

Little distinction is made between routine designs appropriate for "cook book" approaches and one-of-a-kind designs requiring considerable research. Finding cost effective ways to implement environmentally sensitive projects is discouraged. Innovative approaches are discouraged and traditional methods are encouraged even when such is evidently inappropriate.

Since Eng Div is so large and provides so many services, it is difficult to answer these broad based questions.

PLANNING COMMENTS (CONTINUED)

Engineering spends too much time turf building and turf protecting. Not enough effort is spent on teamwork with other office elements and concentrating on a quality District product.

Our analysis is heavily dependent on H&H data. Other aspects of Engineering are less important to our work. The intention of the questionnaire is not clear. Is it strictly intended to reflect "design quality" or other products and services provided by Eng. Div.? We answered it for our branch's perspective.

The Corps' "Engineering Systems" are designed to work well for large projects. We need to come up with better ways to deal with small efforts, which will probably be more important in the future. I believe far too much effort is wasted on protecting Engineering Division "turf" rather than trying to meet the needs of our customers.

We need to improve the quality, training, and experience of Engr. Div. managers.

Issue # 13: While EN has technically competent people, they are sorely lacking, especially in experienced people with a management background.

Issue # 15: Because they don't have highly experienced personnel who understand Civil Works, products are not always commensurate with the level of detail and effort needed - especially on small and routine projects.

Issue # 20: Clearly, many EN people, especially those from a military projects background, do not understand (nor want to) Civil Works planning issues.

SECTION CHIEF

The current problems facing Engineering Division are not as much internal as they are external. Most Engineering regulations are archaic and do not consider the new environment of local sponsors and cost sharing. Excessive needs for technical engineering data on alternative projects increases study costs and thus local sponsor costs just to reach what appears to be a simple answer in many cases. The obsessive need to reduce risks and uncertainty in the early stages of plan development (partially driven by baseline estimate/20% award criteria) drives up the early costs. Much of this is due to current regulations governing engineering requirements in plan development. Engineering Division is pricing the Corps out of a job!

The role of the Corps is simple: find the best damn people, let them do their best, and give the customer what he wants and needs. Reduce the bureaucratic red tape; decentralize approval authority, continue to reduce the number of regulations, eliminate "policy" decisions that are not realistic by a common sense test: i.e., when is a business not a business? Answer: If it's a boating (recreational) business. Also, the Corps does not truly do interdisciplinary planning. The engineering product is only as good as the people associated with it are able to produce. Continue to focus on the need to effectively coordinate. Engineering means/needs more than engineers. Engineering means people dedicated to work together as a team, and, each within their own talents, contribute to a product that completes the mission. The Corps has excelled because of its "people". Continue to focus on that point. Finally, the customer is really our best

PLANNING COMMENTS (CONTINUED)

advertiser. Rethink how we deal with our customers and provide customer relations training to staff dealing with customers. Too many local sponsors recognize that the "partner" relationship effectively has one very limited partner - themselves. Various regions of the county have differing needs. This should be incorporated into the Corps system, not resolved through the "political process."

Issues # 7 & 24: Eng. Div. is expected to provide increasing level of detail to respond to HQ/ASA micromanagement; and yet decreased funds availability (and schedule flexibility) are in conflict. HQ/ASA want more stuff done at earlier phases to justify whether to go to next phase, and yet adequate funds are not available because of budget limits. Answer is political, perhaps.

Issue # 5: Overhead and tech indirect costs are making the Corps uncompetitive! Unfortunately, many of these additional costs are being forced on the districts for micro-management purposes from HQ/ASA. The cost of answering demands for more information and justification for decisions is apparently not analyzed. It seems we are spending dollars on information systems to save pennies on decisions. Real cost savings are not from reorganizing the Corps structure, but by deleting the old information systems when new ones are used. Why have parallel management systems with the same information in 4 different formats?

We try to produce a cost effective product, however, reviewer always asks for more data. Policies and procedures need to be more flexible (reviewers don't understand new and innovative approaches to a problem).

Lack of perspective on smaller and less difficult studies of projects reflects upon the final product as far as budgets and schedules are concerned.

OTHER--CIVIL ENGINEER

We have lost (never had?) any leading-edge technical capability. We use old, outdated methods to achieve its work. Engineering treats its engineers like clerks.

Need to strive for consistency of requirements for a product from budget to completion. Budgets normally reflect much less than completed product is expected to have. Also, provide charge #'s to complete these questionnaires.

The quality of Engineering products is too often undesirable. These products, while containing excellent designs from an engineering point of view, disregard the total picture, and lead to non-implementable plans. All the factors involved, the considerations and agreements reached during the plan formulation process, are either ignored or not given further consideration. Continuity is a must and it is badly needed in the planning/design/construction of projects.

There just aren't enough FTEs in Engineering to get work completed on schedule! As a planner, this is my biggest concern.

PLANNING COMMENTS (CONTINUED)

There is not enough guidance or regulations on the level of detail required in a Recon Study. Many of the support elements (Hydraulics Br, Real Estate, Geotech, etc.) attempt to do too much detail during a Continuing Authority Recon Study. Currently there is no written guideline on how little is acceptable for such a small study (low budget). I think there should be separate guidance for Continuing Authorities Study (i.e., EMs or ERs). We have the Planning Guidance (ER 1105-2-100) as the only regulation that specifically addresses the C.A. Program. If these other support elements knew exactly what level of detail is required for a Continuing Authority Recon Study, we could probably save ourselves thousands of dollars in unnecessary study. Also, it should address Feasibility Studies. Also, it would be helpful for reviewers at the Division level to know what to expect. I think they are also guilty of applying too much time, effort, and technical detail for small studies. I think we let a lot of good projects slip away because they are "over-designed" and especially "over-estimated". Cost engineers are the first ones who need to be educated on the difference in a Small Project and a General Investigative study.

We could do better in defining alternatives and the costs associated with evaluating more than one alternative. Planning and Engineering need to work closely in the area of formulation to make sure the right alternatives are evaluated and the Div. plan can be identified. A lot of problems could be avoided with good communication. I see improvements with the team approach, but as studies progress, we still can improve with better communication. Costs are a real problem for small projects. The cost of doing business with the overhead we use drives costs up. The cost problem is across the board. It may not specifically be an Engineering problem, but it will affect the Eng. Div. team if we don't improve on our cost effectiveness.

Issue # 14: They need a better technician/designer ratio and more PC and CADD equipment and training for the designers. Issue # 22: The perception is that when something goes wrong there is more interest in "fixing the blame" than in "fixing the problem". Additionally, the consequences (punishment) for mistakes when taking a risk or using professional judgement seems to far exceed the potential rewards when the risk pays off. This will stifle creativity and communication.

Unless we can reduce our costs and improve our responsiveness, our future with cost-shared projects (sponsors) is very bleak. We are not a competitive nor responsive cost sharing partner for most communities. We are too conservative and inflexible. I feel that the "202" Program has caused (actually, allowed) us to stay "fat and lazy," whereas, we will have to become "lean and mean" to be effective in a cost sharing/cost effective world. Our overhead is too high. Our support system is frustrating, and often a real burden. Required administrative details limit productivity.

Eng. Div. needs to assure employees are developed by experience and training.

Hydraulics work is seriously effected by a shortage of skilled personnel.

Need improvement in maintaining open communications; i.e., Do not provide advance warning that product delivery will be late. Also have difficulty in establishing scope of work for recon and feasibility design effort for planning studies. This has often resulted in excessive cost estimates for Engineering.

PLANNING COMMENTS (CONTINUED)

OTHER--STUDY MANAGER

Most of the low scores pertain to H&H Branch. Example: Stage-Frequency Curves are hand drawn with incomplete (hand-written) title and legends. It is common to receive several H&H revisions to their products. H&H should have a program to produce their stage-frequency points, titles and legends. They could then hand-draw the curve to incorporate their engineering judgement. Issue # 3: Personnel should be encouraged to discuss any problems as soon as they occur. Don't wait until a due date passes to discuss it.

Highly experienced staff should be used to define study tasks/requirements and costs so that scopes of study are efficiently defined. Also, this scoping needs more priority so that it can be accomplished without delay (i.e., there have been a number of instances where Eng. Div. identification of work tasks and costs have not been received in a timely manner and this has caused a delay in finalizing and negotiating FCSAs).

As a study manager, I have found various engineering branches generally uncooperative and negative on most studies. The branches continue to submit cost estimates that are unreasonable. They are also reluctant to provide information unless they have spent many hours in analysis. They seem unable to exercise professional judgement on studies that require less effort and analysis.

Issue # 14: FTE cuts in '92 will impact seriously upon mission. Issue # 16: Review comments and unknown issues seriously impact schedule. Issues # 23 & 24: Division, HQ, and ASA have not encouraged new "state of the art" creative designs, or flexibility on policy to explore new areas.

Issue # 14: Eng. Div. may have enough people, but, I would say too many in management. Issue # 25: This is based on experience up to Aug '91. With revised organization, this may be improving. In general, although the Corps is made up of Divisions, its prime base is individuals. Thus, the "level" ratings above [in survey] would vary greatly on an individual or even branch basis.

Issues # 5, 8 & 12: These are important as part of the definition of Product Quality.

I would divide what I see as our most critical problems into the two areas of ORGANIZATION AND POLICY. ORGANIZATION: It appears that Engineering has the correct number of people to do its mission but there appears to be a severe workload imbalance (the people are not where the work is). Having this imbalance can create the same end result of not completing projects on schedule for both the over and underutilized groups. The overutilized (not enough or poor quality personnel) group has more work than can possibly be accomplished (management must show leadership by setting priorities and not repeating the baloney that all projects have the same priority or get more resources). Instead of a few projects slipping you risk having all projects slip. Why hurry when there is no way we can do all of this work? Plus, the underutilized group never provides their input on time. The underutilized group is afraid of running out of work therefore completes nothing on schedule. Continued underutilization of a group can bring disasters. When it comes time for them to produce at a high level they have no practice. These underutilized groups tend to pad their design estimates in order to meet their

PLANNING COMMENTS (CONTINUED)

payroll. They become more focused on maintaining their existence rather than completing the project. Why hurry when the overutilized group has more work than they can do, and if we finish this, what will we do? Over time, if this situation persists, severe TURF problems become rooted in the organization's way of thinking. The result is poor communication within the Division and outside the Division, no respect for other groups, withholding information, missing schedules, increased costs, etc. We must function as a team to ensure both internal and external customer expectations and requirements are met. Crosstraining can help. POLICY: At another level we must ensure Engineering's policies and criteria become more flexible. Then, Engineering products can be designed commensurate with the scope, complexity, and schedule of the project and at that time Engineering products will be cost effective for small projects. Our policies and criteria are choking us. We all agree it should not take as much effort for a small channel project as a dam. The higher level reviewers use the same criteria to make comments on small and big projects. All specialties must get involved on a small project and everyone is covering themselves for upper level review. If we want to do less design for smaller projects someone needs to tell the reviewers and let's take a look at the cost effectiveness of incorporating comments. The best story I can relate is when we got a comment back that we did not have enough environmental documentation on a negative report. SUMMARY: The results of our ineffectiveness and inefficiency is that we DO NOT DELIVER PRODUCTS ON SCHEDULE AND WITHIN BUDGET. If we continue to concentrate on just meeting schedules within budget, sure we will succeed on a few high priority projects but we will fail in terms of the larger picture (Win the Battle, Lose the War). Management must be willing to tackle the tough problems (tear down the barriers) so the working level can be innovative and risk takers.

This survey promotes the stifling tradition of one District element "serving" another, rather than the District serving the public. Stove pipes are a major liability for the Corps.

Problem: About all the projects (work for District) are now small, re Sec 205, 14, etc.. Eng. Div. seems to feel it is "above" this type of project, that it is below their training and ability. "Give us a $150M dam that we trained for". Ungrateful, high-priced, disinterested people. Possible solution: Assign 2 or 3 people from Eng. Div. (design, H&H, cost eng., geotech) to work only or primarily on small projects so that they are familiar with and sympathetic to the abbreviated needs of the small projects. They can help comprise a core team of disciplines to avoid all the company red tape, most of which is not applicable to small projects. We could adapt some standard designs for our 4 or 5 "solutions" so that wheel reinvention was not needed on every project. The USDA, SCS used to do these size projects that way, and would probably give us some time-tested procedures to make it work. Concern: When there is nothing else to work on we will wish we had tried harder to be responsive to clients. We don't need a bulldozer when a backhoe will do. We don't need to hang ourselves under procedure. Let's be responsive to our customers, albeit small ones.

ED needs to make more professional judgement calls and then back those judgement calls at review time. ED tends to want to do more than necessary for smaller jobs (i.e., on recons or 205's). ED reluctant to make decisions on available data but realizes limitations on funding and/or timeframes. Tendency is to be more concerned with CYA than with providing public

PLANNING COMMENTS (CONTINUED)

service. In my opinion, numerous ED employees still do not fully comprehend that cost-shared ventures mean tremendous interfacing with outside forces (sponsors) who have an equal right to say how things will get done, and by whom. I perceive that many ED employees don't equate PD studies as their future job security; "We'll always have construction projects to work on ..." attitude. ED has some very talented staff -- people who can really make the system work. ED is highly regarded as a solid, successful entity (by other Districts) and takes good care of its workforce. Throughout my interfacing with employees of every other district in the nation, I have been told more than once that we are somewhat arrogant. In my opinion, its OK to be arrogant when you can back it up! We can back it up.

Some team members are always on schedule, others are not; appear to work on priority or crisis basis; and present work as required, (minimally) and not the extra mile to do a better job. Additional education (or definition) of planning phase of projects and studies is needed. If team members can't attend a team meeting, it should be a branch responsibility to follow-up.

Engineering (along with other org.) has too many levels of management and is potentially overstaffed, driving up cost. Engineering criteria in the current arena of cost sharing is too inflexible. Local sponsors need designs that are cost effective, but our design criteria won't allow this; i.e., the Corps "gold plated" designs for flood control structures are not acceptable. We must be flexible enough to meet local financial constraints. Local funds are scrutinized by the districts that control them and should not be used for designs that are excessive. Also, our multiple level of review drives up cost (District/Division/HQUSACE).

Engineering needs flexibility in the design of structures that are commensurate with the product -- (over design and gold plating of structures on small projects need review). Engineering managers need a better idea of the cost and time required to do a task.

Cost engineering needs to pay more attention to level of detail required (i.e., initial, appraisal, recon, etc.).

OTHER--VARIOUS

Generally, quality is excellent, on schedule and within budget. Once in a while, a "mad scientist" will drift beyond the necessary scope and drive up costs.

(EnvPlnr) Acceptance of environmental concerns for incorporation into designs prior to a "final design" is just beginning to occur.

(PM) My biggest concern, as a project manager, is to get an adequate product from the Eng Div that is both on time and within the budget. The Eng Div has suffered manpower shortages which, in part, explain delays in receiving promised work products. However, there is a lack of adequate communication to forewarn of pending delays and cost increases. With more open and timely communication, many problems could be averted prior to becoming major difficulties.

PLANNING COMMENTS (CONTINUED)

(ProjMgr) Planning Division needs quality products on schedule and within budget from Eng. Div. Quality products are technically adequate and are commensurate with the scope of the project. I believe that the recent departure of experienced engineers, especially in Hydraulics Branch, has hurt the quality of studies. However, we have many fine replacement engineers that will be a valuable asset. I would like to see Engineering Division complete a similar survey on Planning Division. I believe constructive criticism is sometimes useful.

(TechStyMgr) We continue to build Cadillacs when Chevrolets will do! Engineering staff wants to "practice" biology and other disciplines.

(Bio) From an environmental planning viewpoint, incorporation of environmental considerations early in design through construction has been a weak point. The perceived problem is a lack of environmental sensitivity, lack of a procedure for resolving environmental input, and lack of money to investigate non-traditional solutions to water resources problems.

(Econ) Realistic schedules are critical to good planning and study layout. When the push to exhibit a "can-do" attitude overrides realistic discussion of schedules, the product suffers, staff suffers, and credibility suffers. The result of an unrealistic "can-do" mentality is costly overtime and necessary rework for a poor product (which is costly and demoralizing).

(PM) This survey does not allow for the wide variety of quality to be addressed. When it's good, it's great; when it's bad, it's abysmal! Some elements and individuals are terrific and go out of their way to do a good job, even if they aren't familiar with the requirements. Others are downright obstructionist and willfully ignore details of requests. Many potentially good technical folks have no perspective on the Corps mission and have no idea how their work fits into a project, or what effect it has on the quality of the end result, after the next element uses their piece in the next set of calculations (garbage in - garbage out). We are already feeling the brain drain of many competent people retiring and/or just leaving the Corps. If more things were done right, the first time, fewer things would have to be done over and over and over. This is unrelated to going on to more detailed levels, it's a problem within any stage.

(PM) Engineering has extreme difficulty adjusting to various levels of detail, whether it be recon, feasibility, PlnEngr. Div., or P&S. "Design for Dollars!"

(PM) It is difficult to rate Eng. Div. as a whole. In some areas they are working at a 5 level, and in others at a 2 or 3 level. I would have liked to been able to rate individual branches or sections. Also, some sections have experienced people, while others have less experienced people. Experience is a huge factor in quality of work. Improvements in reviewing work of non-experienced personnel would help equalize quality.

(PM) Engineering has the correct number of people, but not enough workers. There are far too many sections and as soon as a person gets a little experience they are made a supervisor. Then they are spending too much time on administrative matters and there are too few left to do the work. All these supervisors then make more administrative work. On top of

PLANNING COMMENTS (CONTINUED)

these functional chiefs, we then have engineering project managers who report to planning study managers and/or LCPM managers. What is needed is fewer functional supervisors (design) and more team and senior engineers who could well have the GS-13 grade. They would deal with engineering and not with administration. All the current administrators make work to justify themselves, including some make work for the workers. On the side we have the engineering project managers. These people should not be on the side -- an engineering (design) leader should be selected from those working on the project. We need to eliminate hierarchy layers at the district. Keeping the hierarchy informed increases the time and cost of a project. Just supporting the salaries of the hierarchy adds to the cost of a project (and the non-Federal sponsor) and frequently adds nothing to the value of the product.

(ProjMgr) I feel design is constrained by rules and regulations. Also, there is too much review before implementation.

(ProjMgr) E&D costs are generally too high relative to construction costs. Div and HQ technical reviewers should permit reduced level of detail commensurate with scope of CAP projects with no threat of loss of like (e.g., Sec 14, Sec 208).

(TechMgr) In my view, engineers and the work they do are valuable and scarce resources in the district. I believe the competence is here, the dedication is here, and a reasonable number of engineers are here. These resources don't seem to be properly utilized. We're training engineers for new missions when we're behind on the current missions. We're letting engineers fill positions that an accountant, economist, or biologist could handle. However, the void left in Design or Coastal may not be easy to fill. There also appears to be too much specialization within Eng. Div. The talent may be there but it may not be easy to get someone working on your product. This perception may not be correct, but things are perceived this way in Eng. and other areas (especially IMO). This specialization and reorganization in the last 10 years or so put a lot of distance between planning and engineering functions such as preliminary designs, planning level cost estimates, and H&H. Naturally, the greater the distance and separation, the greater the chance of miscommunication. This isn't a pitch to put things back the way they were 10-15 years ago. However, Eng. Div. must understand that the needs of Planning are vastly different from Engineering in many ways. Planning may need 10-50 cost estimates done quickly and cheaply to narrow down to 2 or 3 plans. This type of work wasn't done in Eng. Div. in the past; however, it's now the responsibility of Eng. and the need is still there.

VI. OPERATIONS COMMENTS

DIVISION CHIEF

All issues identified are important, and make up quality-cost-schedule. There is a problem with projects <$1M -- Eng. is structured to handle large projects well. I think there is too much layering for most of our current type work (re: Issue # 25). I suggest there may be opportunities to delayer approval processes without necessarily delayering the organization. I am moving that way in Ops, by trying to delegate more at all levels.

Our Engineering Division is now establishing two formal processes to review and assure feedback and to address issues.

Engineering is in serious threat of being overpowered by Project Management.

BRANCH CHIEF

The laws have changed since the enactment of the WRDA of 1986, but we have not. We need to provide local interest with the product they want and can afford. Instead, we are still trying to give them what we want them to have. Our planners are also at fault. -- We still have individuals who do not consider design cost. All they want is a charge number and let the product managers worry about funding. Each individual should be accountable for their charges to a project. As a side note to cost, we are told to become cost competitive with private industry. However, we are not allowed to compete under the same rules. Private industry does not have to support SBA and 8A programs, they do not have FARS & EFARS, and they do not have to advertise in the CBD. They also do not have to support large stovepipes. I'm not saying that they things are bad; I'm merely saying that we cannot be competitive with private industry as long as we are burdened by all of these rules. -- One of our greatest faults is not allowing our design engineers to follow through to construction. Instead of learning lessons, the emphasis is on pointing fingers when errors are made. No Division Chief wants to admit fault and take the heat for a mistake. Our lack of follow-through is a result of lack of manpower to a certain degree. Regardless, the end result is that we continue to re-invent the wheel and make the same mistakes.

A roll-up of ED charges indicate that too many people work on and charge to a project.

Quality of AE work has been less than satisfactory at times, but seems to be improving the last couple of years.

Good people doing a good job. The engineering concept should be discussed with construction and opns at a scope meeting to assure economic and requirements feasibility. Design reviews are important and should not be rushed to exceed need.

Engineering suffers more from lack of experience and awareness than from lack of talent or technical capabilities.

We do not need to design "award winners" every time. E&D and construction costs are too high. PM is another add-on cost. We must be efficient to survive and are just not doing it.

OPERATIONS COMMENTS (CONTINUED)

Quality of engineering services is critical to the completion of the Operations workload mission and the cooperation and engineering support have been exceptional to date.

Quality is very high but so is cost. Eng. Div. is not geared to small projects -- needs enhancement.

In general, it does not do justice to all of the branches within Engineering by lumping them all together for this rating. It should be noted that some branches seem to be highly efficient and customer oriented. A listing of banches that I have had dealings with is provided so that a better comparison can be made: [In order from best quality to worst quality] Specification Sec., Geotech, Field Survey Unit, Hydrol. & Hydraul. Br., Engr. Mgmt. & Spt. Br., Structural Design Sec., and Elec. & Mech. Design Section.

Engineering Divisions throughout our Division do not effectively cross communicate to arrive at standardized a) state of the art designs, and b) lessons learned solutions to problems recognized at navigation structures. There should be division-wide generic standards for lock gates; tainter valves; emergency bulkheads; valve screens; operating machinery; anchorage systems; bulkhead slots for dewatering the entire chamber vs. dewatering just the U.S. or D.S. gate bays; electrical controls; hydraulic system; lock lighting; etc.

Quality is sometimes sacrificed to maintain schedule.

Annual work such as water control management, F&M support, etc. are done well and in a timely manner. However, special non-repetitive items seem to drag out with significant time and cost growth, and inadequate project management within Eng. Div. This has forced Opns Div. to attempt to more closely monitor the "intra-Eng. Div." activities, which has proven awkward and difficult to do. I don't feel that Eng. Div. gives adequate program management support to the O&M program. O&M $ are a significant and reliable source of funding and work for Eng. Div., but I don't sense that any one person or branch serves as POC for Eng. Div.'s total O&M program. While Civil Program Management Branch tries to fill that role, they are often unaware of status or details of work underway in other branches/sections. It falls to Opns Div. to push the communications on most activities with Eng. Div. I'd appreciate a more proactive stance by Eng. Div. on the O&M program.

Issue # 1: Eng. Div. works to their own schedule on O&M projects. They are not budget driven to meet expenditure goals. Issue # 12: Designs are not meeting environmental compliance laws. Issue # 22: We are seeing the same designed-in problems as we have on earlier projects. Some things have been corrected but we should not have to be the agent that points out deficiencies when a new project is started. There needs to be a data base which catches things as we discover them, and is readily available should a similar project come up for design in the future. The present system lets things fall through the cracks of time (changes in personnel, etc.).

Costs for design of small projects are too high and too many. High cost mods are showing up while the job is under construction. Better review of plans and specs is needed.

OPERATIONS COMMENTS (CONTINUED)

Engineering product quality varies from branch to branch. Therefore, the responses provided are somewhat of an average. I would point out that certain branches, i.e. elec., and mech. have provided outstanding service while others are not quite up to their level of service.

Relationship with Project Management Branch is not discussed above. PM is not working on small projects - it only stifles the process and creates confusion.

Generally, I'm very pleased with Eng. Div. support.

Issue # 8: Total design costs can approach the contract cost on very small projects.

We need to consider long-term O&M costs. Listen to the user - don't dictate!

Completion dates are not predictable, staffing apparently is inadequate for ops projects, other areas are given priority over ops work, and final work or product is very acceptable. Engineers work well with ops staff to achieve excellent end product. Maybe ops should be given direct access to E&D through AE sources to supplement in-house capability. The main problem is meeting budget and project deadlines and losing funds.

SECTION CHIEF

Engineering Division does not see Operations Division as its customer and resents our involvement in design. A large portion of our time and operation dollars are spent in correcting design and construction deficiencies. One of the primary sources of our quality problems results from the antiquated sealed-bid contract. A "Cost Plus Award Fee" type contract creates a much less combative relationship with the contractor and, therefore, allows the contractor and contracting officer to quickly identify no-workable plans and specs and correct them without modification hassles. The stated goal would be a serviceable end product with state-of-the-art equipment zero defects. This type contract will compensate for less than perfect specifications which are a myth.

The issues raised by the above responses have been the subject of considerable discussion in this District. Eng Div is not responsive to small O&M jobs. The design fees are way out of proportion to the construction cost. For example, we are paying 35% design fee for a simple package that does not have technical design requirements.

Total FTE adequate but too many engineers and too few technicians. New work/O&M (Civil).

Eng. Div. personnel are technically competent and appear well organized for large jobs. On smaller jobs, they tend to seriously overdesign the facility, and the cost of their engineering services is far too expensive.

Military projects seem to have priority over Civil Works, causing difficulty in scheduling and expenditures.

OPERATIONS COMMENTS (CONTINUED)

Engineering has improved within the last 6 months because a design branch Chief with a construction background has taken over.

The worst problem operations has is getting plans and specifications completed by Engineering in a time frame to properly execute the O&M budget and work programs. The slippage of completion dates for plans and specs, and its effect on budget execution is our biggest problem. We deal primarily with four sections in Engineering: Mechanical, Structural, Electrical, and General. There is a great variation in the way the sections meet completion dates and the way individual engineers within sections meet completion dates. There is also a wide variation of the technical competency of individual engineers and technicians within engineering. A very few engineers are very poor, in my opinion. I will now state what I feel is at the origin of the problem in engineering as well as other Government functions in general. The better engineers and technicians carry the whole workload for themselves and the "poor" ones. This causes continual slippage of completion. Also, the "good" and the "poor" quality employees are essentially paid the same. The poorer performing sections also hold up the "better" sections for multi-discipline work. There are a lot of good employees in Engineering Division.

The above assessment is for most of engineering division, however, the elec. and mech. section of design branch is head and shoulders above the others.

Main desire is for quality products at lowest possible costs -- due to so many regs and red tape this is often impossible with small projects.

Too many people are doing busy work. [Eng. Div.?] needs a complete organizational overhaul to develop a new organizational structure based on current workload.

OTHER--VARIOUS

[Eng. Div. is?] technically competent; needs to be more "customer care" [oriented] to[wards] the client.

O&M needs engineering design performed about two years prior to budget year. This has not been done in past years.

[We] need to look at long-term impacts such as maintenance and operability, and not so much on first cost in all design work.

Quality of contract plans and specs has shown definite progress; however, establishment of schedules and priorities could use some improvement.

Engineering personnel should seek out "state of the art" products rather than copy outdated guide specs. If we do not have in-house expertise to prepare a new design concept, we should then have such work performed by an AE contractor until our personnel are adequately trained. Proper balance of AE contract and work by trained Engineering personnel will assist in reducing design costs and expensive contract modifications.

OPERATIONS COMMENTS (CONTINUED)

(CETech) For anyone assigned to work on a "project," the initial act should be a site visit. "Overbuild" safety factor is major flaw in engineering products meeting the requirements of the local sponsor. Too many government monuments.

(CETech) EN has more than enough people, but not adequately apportioned to the areas of highest demand. EN perceives feedback as criticism. EN delivers products on their schedule. Technically adequate products don't require multitudes of modifications. No lessons learned system in place. Every set of Plans & Specifications is like a new day. No state of the art products, guide specs. might partially be responsible. EN is extremely slow in the preparation of plans, specs and cost estimates for modifications, often posing impacts to ongoing contract schedules. EN is not cost effective, much cheaper by AE. EN is responsive to requests for products or services, the timeliness on the response leaves much to be desired. I have no doubt that EN personnel are competent, however, I often times wonder if they ever tap into the technical knowledge they possess. EN products are made to meet our requirements through the modification process.

(EngrTech) Engineering needs to become more responsive to customer concerns and incorporate these concerns into the design requirements.

(ParkMgr) Local sponsors can't afford design/study costs nor excessive cost to construct overdesigned facilities/structures.

(ResMgr) With current workload, Engineering is overstaffed.

(UnitCh) Engineering Division needs to speed up turnaround on plotting of condition soundings.

(CivEngr) Work items of low visibility (non-recurring work items) don't get accomplished in a timely manner and costs to complete work are very high.

(CivEngr) Issue # 14: There are too many [people in Eng. Div.], and yet a large portion of work is contracted out to private firms [AEs]. Issue # 24: There is very little flexibility in Eng. Div..

(CivEngr) Eng. Div. "designers" need to visit sites to better ascertain requirements. This does not mean Chiefs of Sections or Branches, but the "work horses" or lower level engineers. This gives them a better understanding of the project and will help them develop better technically and professionally. One major area the COE lacks competence in is in the area of "electronics". This district has EEs but none specialized in the field of electronics. This puts the COE at a big disadvantage when performing bid analysis on contracts. Training of our engineers needs to be addressed. When times get tough (budget reductions), the first thing that is cut out is training, seminars, etc. This puts us at a disadvantage with private industry. Basic engineering principles are acquired through formal education, but in order to keep up with current technology we need training. It's also COE policy to train its people for the future, as indicated in mission statements. This is sometimes difficult with "old school" personnel. A good example is in use of computers. If we can't train people, then we need to hire to fill in areas of incompetence.

(LkMgr) AE contracted Plans and Specs usually require resurvey and much correction.

OPERATIONS COMMENTS (CONTINUED)

(Plnr) Engr. suffers from a lack of cohesive leadership and direction. No one sets priorities for work; employees must set their own. There is no sense of EP as an entity or "family". There is very little communication from top to bottom (chain of command) or among branch chiefs. Unrealistic schedules are set (often by PM) and then adhered to at the expense of efficiency and sometimes production planning projects. Design work for Operations is frequently behind schedule and delivered late. The entire Planning branch suffers from vague, shifting priorities and lack of continuity. Good points: Design branch is extremely cooperative and anxious to please on design for Operations Division. All EP employees are knowledgeable, bright, and well-educated as a rule. They desire a high-quality product and respect "good science." Employees are encouraged in cross-training and developmental assignments.

(PM) Studies: Engineering needs to use a team approach during initial planning to insure hydraulic design is coordinated with foundations and design, so that hydraulic design does not have to be reworked.

(Rngr) Eng. Div. seems to be more responsive within the past six months -- team concept is good. Cost for services still seems high.

(RsvrMgr) Issues # 14 & 15: Knowledge of capabilities in these areas is based on cost and quality of product provided.

LAST PAGE OF REPORT